

No.	Records	Request
1	29713	citrus
2	5350	canker
* 3	300	citrus canker
4	190410	biological
5	528338	control
6	10	#3 and biological control

Record 1 of 298 - AGRICOLA 1998-2000/03

AN: IND 22007639

UD: 199911

AU: Pruvost,-O.; Gottwald,-T.R.; Brocherieux,-C.

TI: The effect of irrigation practices on the spatio-temporal increase of Asiatic citrus canker in simulated nursery plots in Reunion Island.

SO: Eur-j-plant-pathol. Dordrecht ; Boston : Kluwer Academic Publishers, c1994-. Jan 1999. v. 105 (1) p. 23-37.

CN: DNAL SB599.E97

PA: Foreign

PY: 1999

LA: English

CP: Netherlands

CO: EPLPEH

IS: ISSN: 0929-1873

NT: Includes references.

PT: Article

SF: IND

DE: xanthomonas-. overhead-irrigation. trickle-irrigation. mist-irrigation. simulation-. nurseries-.

spatial-distribution. epidemiology-. orchards-. disease-transmission. incidence-. virulence-. disease-course.

mathematical-models. rain-. plant-diseases. reunion-.

ID: xanthomonas-axonopodis-pv.-citri.

CC: F832

AB: Asiatic citrus canker is a potentially severe disease of several citrus species and cultivars in many tropical and subtropical areas. In such areas, infected nursery plants constitute an important source of primary inoculum for newly established citrus groves. The influence of overhead, drip, and mist irrigation systems on the development of Asiatic citrus canker was studied in simulated. Mexican-lime nurseries in Reunion Island. Overhead irrigation exacerbated the increase of disease incidence and severity caused by a streptomycin-resistant strain of *Xanthomonas axonopodis* pv. *citri*. The temporal development of Asiatic citrus canker for overhead irrigated nursery plots was best described by an exponential model, because disease incidence in these plots did not come close to an asymptote during the experimental period. This can be explained by the continuous production of new growth, susceptible to infection by *Xanthomonas axonopodis* pv. *citri*, and splash dispersal of *Xanthomonas axonopodis* pv. *citri* associated with overhead irrigation. Based on spatial correlation and spatio-temporal analyses, aggregated disease patterns were found irrespective of the irrigation system. In overhead-irrigated plots, the spread of *Xanthomonas axonopodis* pv. *citri* lacked directionality. Rainstorms of short duration and high intensity were apparently associated with disease increase in drip-irrigated plots. There is a need to improve cultivation practices in Reunion Island citrus nurseries to minimize Asiatic citrus canker incidence in nurseries and to minimize the introduction of *Xanthomonas axonopodis* pv. *citri* to new groves.

XAU: CIRAD, Saint Pierre, Reunion Island, France.

Record 2 of 298 - AGRICOLA 1998-2000/03

AN: CAT 10870469

UD: 199906

AU: Kender,-Walter-J.

TI: Citrus canker : research on the detection, characterization, biology, and control of the disease and its causal agent.

OT: 1988/89 annual report.

SO: Lake Alfred, Fla. : Citrus Research and Education Center, University of Florida, IFAS, [1989] 101 p., [1] leaf of plates : ill. (1 col.)
CN: DNAL SB608.C5K46-1989
PA: Other-US
PY: 1989
LA: English
CP: Florida; USA
NT: "USDA-ARS-AAD/IFAS Cooperative Agreement no. 58-43 YK-5-3."
PT: Monograph; Bibliography
DE: Citrus-canker-Research-Florida.
CC: F832

Record 3 of 298 - AGRICOLA (1979 - 1984)

AN: GUA 84127055
UD: 8400
AU: Danos,-E.; Berger,-R.D.; Stall,-R.E.
TI: Temporal and spatial spread of citrus canker within groves [*Xanthomonas campestris* pv. *citri*, Argentina].
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Aug 1984. v. 74 (8) p. 904-908. ill.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1984
LA: English
CO: PHYTAJ
IS: ISSN: 0031-949X
NT: Includes 16 references.
PT: Article
DE: Argentina-.
CC: F832

Record 4 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84099832
UD: 8400
AU: Currier,-W.
TI: Mexican citrus canker: options and implications.
SO: Avocado-Grow. Vista, Calif. : Rancher Pub. Feb 1983. v. 7 (2) p. 48-50.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1983
LA: English
IS: ISSN: 0193-399X
PT: Article
DE: Mexico-.
CC: F832

Record 5 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84099835
UD: 8400
AU: Currier,-W.
TI: Wider implications seen in citrus canker case [U.S. quarantine regulations, Mexican limes].
SO: Avocado-Grow. Vista, Calif. : Rancher Pub. Mar 1983. v. 7 (3) p. 48-50.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1983

LA: English
IS: ISSN: 0193-399X
PT: Article
DE: USA-. Mexico-.
CC: D500; F832

Record 6 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84096774
UD: 8400
AU: Serizawa,-S.; Inoue,-K.
TI: Studies on citrus canker disease, caused by *Xanthomonas campestris* pv. *citri* (Hasse 1915) Dye 1978. VIII. Examining the percentage of diseased leaves and the severity of lesions as a standard for forecasting its occurrence [in Japan].
SO: Shizuoka-Kankitsu-Shikenjo-Kenkyu-Hokoku-Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi : Shizuoka Kankitsu Shikenjo. Apr 1983. (19) p. 51-58. ill.
CN: DNAL 93.33-SH62B
PA: Foreign
PY: 1983
LA: Japanese; Summary in: English
IS: ISSN: 0488-6828
NT: Includes references.
PT: Article
DE: Japan-.
CC: F832

Record 7 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84091217
UD: 8400
AU: Takahashi,-T.; Doke,-N.
TI: Agglutination of *Xanthomonas campestris* pv. *citri*, a causal pathogen of citrus canker, by proteinaceous components from citrus leaves [*Citrus unshiu*, *Citrus reticulata*, Mandarin oranges, *Citrus natsuda*].
SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo : The Society. Dec 1983. v.49 (5) p. 600-609. ill.
CN: DNAL 464.9-P562
PA: Foreign
PY: 1983
LA: English; Summary in: Japanese
CO: NSBGA
IS: ISSN: 0031-9473
NT: Includes references.
PT: Article
CC: F832

Record 8 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84042811
UD: 8400
AU: Falico-de-Alcaraz,-G.;
TI: Control of citrus canker (*Xanthomonas citri* Hasse Dow) in grapefruit (*Citrus paradisi* Macfayen). Control de la cancrrosis de los citricos (*Xanthomonas citri* Hasse Dow) en pomelo (*Citrus paradisi* Macfayen).
OT: Control de la cancrrosis de los citricos (*Xanthomonas citri* Hasse Dow) en pomelo (*Citrus paradisi* Macfayen).
SO: Fitopatologia. Lima, Peru : Asociacion Latinoamericana de Fitopatologia. May 1982. v. 17 (1) p. 48-53.
CN: DNAL SB599.F5
PA: Foreign

PY: 1982
LA: Spanish; Summary in: English
CO: FTPGA
IS: ISSN: 0430-6155
NT: Includes references.
PT: Article
CC: F832

Record 9 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84032048
UD: 8400
AU: Ota,-T.
TI: Interactions in vitro and in vivo between *Xanthomonas campestris* pv. *citri* and antagonistic *Pseudomonas* sp. [Citrus canker].
SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo : The Society. July 1983. v. 49 (3) p. 308-315.
CN: DNAL 464.9-P562
PA: Foreign
PY: 1983
LA: Japanese; Summary in: English
CO: NSBGA
IS: ISSN: 0031-9473
NT: Includes references.
PT: Article
CC: F832

Record 10 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84012712
UD: 8400
AU: Krishna,-A.; Nema,-A.G.
TI: Evaluation of chemicals for the control of citrus canker [caused by *Xanthomonas compestris* pv. *citri*].
SO: Indian-Phytopathol. New Delhi : Indian Phytopathological Society. June 1983. v. 36 (2) p. 348-350.
CN: DNAL 464.8-IN2
PA: Foreign
PY: 1983
LA: English
CO: IPHYA
IS: ISSN: 0367-973X
NT: Includes references.
PT: Article
CC: F832

Record 11 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83128172
UD: 8400
AU: Chand,-J.N.; Pal,-V.
TI: Citrus canker in India and its management [*Xanthomonas citri*].
SO: Problems of citrus diseases in India / edited by S.P. Raychaudhuri, Y.S. Ahlawat. New Delhi : Surabhi Printers and Publishers, c1982. p. 21-36.
CN: DNAL SB608.C5P7
PA: Foreign
PY: 1982
LA: English

NT: Literature review.
Includes references.
PT: Article
CC: F832

Record 12 of 298 - AGRICOLA (1979 - 1984)

AN: IND 84000361
UD: 8400
AU: Kanur,-S.P.; Cheema,-S.S.; Kapur,-S.
TI: Field screening of citrus germplasm against citrus canker caused by *Xanthomonas citri* (Hasse) Dowson.
SO: Indian-J-Hortic. Bangalore : K. L. Chadha. Sept/Dec 1981. v. 38 (3/4) p. 265-267.
CN: DNAL 80-IN2
PA: Foreign
PY: 1981
LA: English
CO: IJHOA
IS: ISSN: 0019-5251
NT: Includes references.
PT: Article
CC: F832

Record 13 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83070375
UD: 8300
AU: Bach,-E.E.; Alba,-A.P.C.; Neto,-J.R.
TI: Detection of strains of *Xanthomonas campestris* pv. *citri* (Hasse) dye by enzyme-linked immunosorbent assay (ELISA) Citrus canker, Brazil.
SO: Fitopatol-Bras. Brasilia : Sociedade Brasileira de Fitopatologia. Oct 1982. v. 7 (3) p. 407-415.
CN: DNAL SB599.F55
PA: Foreign
PY: 1982
LA: English; Summary in: Portuguese
CO: FIBRD
IS: ISSN: 0100-4158
NT: Includes references.
PT: Article
DE: Brazil-.
CC: F832

Record 14 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83037210
UD: 8300
AU: Stall,-R.E.; Miller,-J.W.; Marco,-G.M.; Canteros-de-Echenique,-B.I.
TI: Pathogenicity of three strains of citrus canker organism on grapefruit *Xanthomonas campestris* pv. *citri*.
SO: Proceedings of the fifth International Conference on Plant Pathogenic Bacteria, August 16-23, 1981 at CIAT, Cali, Colombia / technical editor J. Carlos Lozano; production editor Paul Gwin. Cali, Colombia : Centro Internacional de Agricultura Tropical, 1982. p. 334-340. ill.
CN: DNAL QR351.I57-1981
PA: Foreign
PY: 1981
LA: English
NT: Includes references.
PT: Article

CC: F832

Record 15 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83037240

UD: 8300

AU: Lopez,-M.M.; Navarro,-L.

TI: A new in vitro inoculation method for citrus canker diagnosis *Xanthomonas citri*.

SO: Proceedings of the fifth International Conference on Plant Pathogenic Bacteria, August 16-23, 1981 at CIAT, Cali, Colombia / technical editor J. Carlos Lozano; production editor Paul Gwin. Cali, Colombia : Centro Internacional de Agricultura Tropical, 1982. p. 584-591. ill.

CN: DNAL QR351.I57-1981

PA: Foreign

PY: 1981

LA: English

NT: Includes references.

PT: Article

CC: F832

Record 16 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83008511

UD: 8300

AU: Serizawa,-S.; Inoue,-K.

TI: Studies on citrus canker disease (*Xanthomonas campestris* pv. *citri* (Hasse 1915) Dye 1978). V. Influence of application interval of Bordeaux mixture and of inorganic copper on the control effect.

SO: Shizuoka-Kankitsu-Shikenjo-Kenkyu-Hokoku-Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi : Shizuoka Kankitsu Shikenjo. Mar 1982. (18) p. 37-48. ill.

CN: DNAL 93.33-SH62B

PA: Foreign

PY: 1982

LA: Japanese; Summary in: English

IS: ISSN: 0488-6828

NT: 8 ref.

PT: Article

CC: F832

Record 17 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83008512

UD: 8300

AU: Serizawa,-S.; Inoue,-K.

TI: Studies on citrus canker disease. (*Xanthomonas campestris* pv. *citri* Hasse (1915) Dye 1978). VI. Phytotoxicities of Bordeaux mixture and inorganic copper.

SO: Shizuoka-Kankitsu-Shikenjo-Kenkyu-Hokoku-Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi : Shizuoka Kankitsu Shikenjo. Mar 1982. (18) p. 49-72. ill.

CN: DNAL 93.33-SH62B

PA: Foreign

PY: 1982

LA: Japanese; Summary in: English

IS: ISSN: 0488-6828

NT: 37 ref.

PT: Article

CC: F832

Record 18 of 298 - AGRICOLA (1979 - 1984)

AN: IND 83008513

UD: 8300

AU: Serizawa,-S.; Inoue,-K.

TI: Studies on citrus canker disease (*Xanthomonas campestris* pv. *citri* (Hasse 1915) Dye 1978). VII. Control effect and phytotoxicity of combined application and short interval alternative application of Bordeaux mixture and inorganiccopper with machine oil emulsifiable concentrate or with mancozeb wettable powder.

SO: Shizuoka-Kankitsu-Shikenjo-Kenkyu-Hokoku-Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi : Shizuoka Kankitsu Shikenjo. Mar 1982. (18) p. 73-82. ill.

CN: DNAL 93.33-SH62B

PA: Foreign

PY: 1982

LA: Japanese; Summary in: English

IS: ISSN: 0488-6828

NT: 6 ref.

PT: Article

CC: F832

Record 19 of 298 - AGRICOLA (1979 - 1984)

AN: IND 82107239

UD: 8200

AU: Lin,-K.S.

TI: A chemotherapeutic study of the citrus canker diseased seedlings *Xanthomanas citri*.

SO: Chih-Wu-Pao-Hu-Hsueh-Pao-Acta-Phytophylacica-Sin. Peking, China, Nung yeh ch'u pan she. Sept 1981. v. 8 (3) p. 159-162.

CN: DNAL SB599.C5

PA: Foreign

PY: 1981

LA: Chinese; Summary in: English

NT: 15 ref.

PT: Article

CC: F832

Record 20 of 298 - AGRICOLA (1979 - 1984)

AN: IND 82069879

UD: 8200

AU: Danos,-E.; Bonazzola,-R.; Berger,-R.D.; Stall,-R.E.; Miller,-J.W.

TI: Progress of citrus canker on some species and combinations in Argentina *Xanthomonas compestris*.

SO: Proc-Annu-Meet-Fla-State-Hortic-Soc. S.I., The Society. 1981 (pub. 1982). v. 94 p. 15-18.

CN: DNAL 81-F66

PA: Other-US

PY: 1981

LA: English

IS: ISSN: 0097-1219

NT: Includes 16 ref.

PT: Article

DE: Argentina-.

CC: F832

Record 21 of 298 - AGRICOLA (1979 - 1984)

AN: IND 82041437

UD: 8200

AU: Purohit,-S.P.

TI: Control of citrus canker (*Xanthomonas citri* Hasse).
SO: estology. Bombay, Scientia Publishing Company. Sept 1981. v. 5 (9) p. 5-7.
CN: DNAL SB950.P47
PA: Foreign
PY: 1981
LA: English
NT: Includes 11 ref.
PT: Article
CC: F832

Record 22 of 298 - AGRICOLA (1979 - 1984)

AN: IND 81041499
UD: 8100
AU: Goto,-M.; Takahashi,-T.; Messina,-M.A.
TI: A comparative study of the strains of *Xanthomonas campestris* pv. *citri* isolated from citrus canker in Japan and cancrrosis B in Argentina.
SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo, The Society. July 1980. v. 46 (3) p. 329-338. ill.
CN: DNAL 464.9-P562
PA: Foreign
PY: 1980
LA: English; Summary in: Japanese
IS: ISSN: 0031-9473
NT: 19 ref.
PT: Article
DE: Japan-. Argentina-.
CC: F832

Record 23 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80103216
UD: 8000
AU: Cohen,-M.
TI: Citrus canker *Xanthomonas citri* in the major citrus production area of Brazil.
SO: Fla-Grower-Rancher. Raleigh, N.C., Specialized Agricultural Publications. July 1980. v. 73 (7) p. 6, 22-23.
CN: DNAL 80-F6622
PA: Other-US
PY: 1980
LA: English
IS: ISSN: 0015-4019
PT: Article
DE: Brazil-.
CC: F832

Record 24 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80035706
UD: 8000
AU: Dai,-H.; Chiang,-K.S.; Kuo,-T.T.
TI: Characterization of a new filamentous phage Cf from *Xanthomonas citri* [a pathogenic bacterium of citrus canker].
SO: J-Gen-Virol. Cambridge, Cambridge University Press. Feb 1980. v. 46 (pt.2) p. 277-289. ill.
CN: DNAL QR360.A1J6

PA: Foreign
PY: 1980
LA: English
IS: ISSN: 0022-1317
NT: 15 ref.
PT: Article
CC: F832

Record 25 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80078864
UD: 8000
AU: Goto,-M.; Yaguchi,-Y.
TI:

Relationship between defoliation and disease severity in citrus canker [*Xanthomonas citri*].

SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo, The Society. Dec 1979. v. 45 (5) p. 689-694. ill.

CN: DNAL 464.9-P562
PA: Foreign
PY: 1979
LA: English; Summary in: Japanese
IS: ISSN: 0031-9473
NT: 6 ref.
PT: Article
CC: F832

Record 26 of 298 - AGRICOLA (1979 - 1984)

AN: IND 79062550
UD: 7900
AU: Prasad,-M.V.R.; Moses,-G.J.; Reddy,-G.S.
TI: Variability in *Xanthomonas citri*, the incitant of citrus canker.
SO: Indian-Phytopathol. New Delhi, Indian Phytopathological Society June 1978 (pub. Jan 1979) v. 31 (2) p. 227-229. ill.
CN: DNAL 464.8-IN2
PY: 1978
LA: English
IS: ISSN: 0367-973X
NT: 5 ref.
PT: Article
CC: 4510

Record 27 of 298 - AGRICOLA (1979 - 1984)

AN: IND 79063814
UD: 7900
AU: Serizawa,-S.; Inoue,-K.
TI: Studies on citrus canker. IV. Influence of rainfall on the residual effectiveness of Bordeaux mixture and inorganic copper *Xanthomonas citri*.
SO: Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi, Shizuoka Kankitsu Shikenjo Aug 1978. (14) p. 13-28. ill.
CN: DNAL 93.33-SH62B
PY: 1978
LA: Japanese; Summary in: English
NT: 20 ref.
PT: Article
CC: 4510

Record 28 of 298 - AGRICOLA (1979 - 1984)

AN: IND 79098421
UD: 7900
AU: Kuhara,-S.
TI: Present epidemic status and control of the citrus canker disease (*Xanthomonas citri* (Hasse) Dowson) in Japan.
SO: Rev-Plant-Prot-Res. Tokyo, Phytopathological Society of Japan. 1978. v. 11 p. 132-142. ill.
CN: DNAL SB599.R43
PY: 1978
LA: English
IS: ISSN: 0557-7527
NT: 97 ref.
PT: Article
ID: Japan-.
CC: 4510

Record 29 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80004390
UD: 7900
AU: Nicholas,-M.E.
TI: Detecting citrus canker Enzyme-linked immunosorbent assay to detect *Xanthomonas citri*.
SO: Agric-Res-U-S-Dept-Agric. Washington, D.C., Science and Education Administration, U.S. Dept. of Agriculture. Oct 1979. v. 28 (4) p. 15. ill.
CN: DNAL 1.98-AG84
PA: USDA
PY: 1979
LA: English
IS: ISSN: 0002-161X
PT: Article
CC: 4510

Record 30 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80017828
UD: 7900
AU: Bach,-E.E.; Alba,-A.P.C.; Pereira,-A.L.G.; Zagatto,-A.G.; Rossetti,-V.
TI: Serological studies of *Xanthomonas citri* (Hasse) Dowson Citrus canker pathogen.
SO: Arq-Inst-Biol-Sao-Paulo. Sao Paulo, O Instituto. Oct/Dec 1978. v. 45 (4) p. 229-235. ill.
CN: DNAL 442.9-SA6
PY: 1978
LA: English; Summary in: Portuguese
IS: ISSN: 0020-3653
NT: 25 ref.
PT: Article
CC: 4510

Record 31 of 298 - AGRICOLA (1979 - 1984)

AN: IND 80023320
UD: 7900
AU: Pereira,-A.L.; Watanabe,-K.; Zagatto,-A.G.; Cianciulli,-P.L.
TI: Survival of *Xanthomonas citri* (Hasse) Dowson, the causal agent of "citrus canker" in the rhizosphere of

guineagrass (*Panicum maximum* Jacq.) Brazil. A sobrevivencia de *Xanthomonas citri* (Hasse) Dowson, agente causal do "cancro citrico" na rizosfera de capim coloniao (*Panicum maximum* Jacq.).

OT: A sobrevivencia de *Xanthomonas citri* (Hasse) Dowson, agente causal do "cancro citrico" na rizosfera de capim coloniao (*Panicum maximum* Jacq.).

SO: Biologico. Sao Paulo, O Instituto Biologico. June 1978. v. 44 (6) p. 135-138. ill.

CN: DNAL 442.8-B529

PY: 1978

LA: Portuguese; Summary in: English

NT: 10 ref.

PT: Article

ID: Brazil-.

CC: 4510

Record 32 of 298 - AGRICOLA 1992-1997

AN: IND 20594035

UD: 9710

AU: Akhtar,-M.A.; Rahber-Bhatti,-M.H.; Aslam,-M.

TI: Antibacterial activity of plant diffusate against *Xanthomonas campestris* pv. *citri*.

SO: Int-j-pest-manag. London : Taylor & Francis Ltd., 1993-. Apr/June 1997. v. 43 (2) p. 149-153.

CN: DNAL SB950.A1P3

PA: Foreign

PY: 1997

LA: English

CP: England; UK

IS: ISSN: 0967-0874

NT: Includes references.

PT: Article

SF: IND

DE: plant-extracts. xanthomonas-campestris-pv.-citri. antibacterial-properties. inhibition-. dosage-. plant-disease-control. plant-diseases.

ID: citrus-bacterial-canker-disease.

CC: F832

XAU: National Agricultural Research Centre, Islamabad, Pakistan.

Record 33 of 298 - AGRICOLA 1992-1997

AN: IND 20586846

UD: 9709

AU: Hartung,-J.S.; Pruvost,-O.P.; Villemot,-I.; Alvarez,-A.

TI: Rapid and sensitive colorimetric detection of *Xanthomonas axonopodis* pv. *citri* by immunocapture and a nested-polymerase chain reaction assay.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society, 1911-. Jan 1996. v. 86 (1) p. 95-101.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1996

LA: English

CP: Minnesota; USA

CO: PHYTAJ

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

SF: IND

DE: citrus-. xanthomonas-. plant-pathogenic-bacteria. diagnostic-techniques. rapid-methods. pathogenicity-. colorimetry-. polymerase-chain-reaction.

ID: citrus-bacterial-canker.

CC: F832

AB: We have developed a sensitive and specific assay for *Xanthomonas axonopodis* pv. citri, the causal agent of citrus bacterial canker. The assay is based on sequential nested amplification by polymerase chain reaction (PCR) of a region of plasmid DNA that is very highly conserved in *X. axonopodis* pv. citri. Specific amplification products were observed in reactions containing three or fewer target molecules, an improvement of 50- to 100-fold over single-stage PCR, and similar results were observed when beginning with purified DNA or living bacterial cells. Colorimetric detection of amplification products was performed with the DIANA (detection of immobilized amplified nucleic acids) method, which uses labeled primers to allow amplification product capture and detection in a microtiter plate. Predicted amplification products were produced from all strains of *X. axonopodis* pv. citri and from four of six strains of *X. axonopodis* pv. aurantifolii but not from other xanthomonads, including citrus epiphytes, except for *X. axonopodis* pv. vignicola and one strain isolated from *Feronia elephantiacum*, consistent with previous hybridization results. No amplification products were observed from strains of *X. axonopodis* pv. citrumelo that incite citrus bacterial spot disease in Florida citrus nurseries. Amplification was completely inhibited by copper hydroxide when present in the reaction mix at 13.6 micrograms/ml. Concentrated leaf extracts from tangelo and mandarin orange, but not similar extracts from other citrus varieties, also inhibited amplification. Immunomagnetic separation of target bacteria prior to amplification was used to concentrate and recover *X. axonopodis*.

pv. citri from samples containing compounds that inhibit amplification (i.e., copper and concentrated citrus extracts). Immunocapture, by concentrating target bacteria from dilute plant extracts, improved the sensitivity of the assay by 100-fold over nested-PCR alone. The combination of sensitivity, specificity, and speed of the assay could make this a widely used assay both in plant quarantine and in areas where *X. axonopodis* pv. citri is endemic and clean planting stock programs are to be initiated.

XAU: USDA, ARS, BARC, Beltsville, MD.

Record 34 of 298 - AGRICOLA 1992-1997

AN: IND 20539536

UD: 9612

AU: Gottwald,-T.R.; Timmer,-L.W.

TI: The efficacy of windbreaks in reducing the spread of citrus canker caused by *Xanthomonas campestris* pv. citri.

SO: Trop-agric. St. Augustine, Trinidad : The University of the West Indies Press. July 1995. v. 72 (3) p. 194-201.

CN: DNAL 26-T754

PA: Foreign

PY: 1995

LA: English

CP: Trinidad-and-Tobago

CO: TAGLA2

IS: ISSN: 0041-3216

NT: Includes references.

PT: Article

SF: IND

DE: xanthomonas-campestris-pv.-citri. citrus-. epidemiology-. incidence-. disease-transmission. time-. windbreaks-. copper-. mathematical-models. gradients-. strain-differences. virulence-. citrus-paradisi. plant-disease-control. citrus-limon. argentina-.

CC: F832; X100; B200; F110; F200

XAU: USDA, ARS, Orlando, FL.

Record 35 of 298 - AGRICOLA 1992-1997

AN: IND 20406242

UD: 9408

AU: Leite,-R.P.-Jr.; Egel,-D.S.; Stall,-R.E.

TI: Genetic analysis of hrp-related DNA sequences of *Xanthomonas campestris* strains causing diseases of citrus.

SO: Appl-enviro-microbiol. Washington : American Society for Microbiology. Apr 1994. v. 60 (4) p. 1078-1086.

CN: DNAL 448.3-Ap5

PA: Other-US

PY: 1994
LA: English
CP: District-of-Columbia; USA
CO: AEMIDF
IS: ISSN: 0099-2240
NT: Includes references.
PT: Article
SF: IND
DE: xanthomonas-campestris. xanthomonas-campestris-pv.-citri. structural-genes. pathogenicity-. southern-blotting. restriction-endonuclease-analysis. restriction-fragment-length-polymorphism. cankers-. citrus-.
ID: xanthomonas-campestris-pv.-citrumelo. hrp-gene.
CC: F832

AB: The hrp gene cluster of strains of *Xanthomonas campestris* that cause diseases of citrus was examined by Southern hybridization of genomic DNA and by restriction endonuclease analysis of enzymatically amplified DNA fragments of the hrp gene cluster. The hrp genes were present in all strains of the pathovars of *X. campestris* tested in this study, including strains of the three aggressiveness groups of the citrus bacterial spot pathogen, *X. campestris* pv. citrumelo. *X. campestris* pv. citri strains in groups A, B, and C, which cause citrus canker A, B, and C, respectively, each produced characteristic restriction banding patterns of amplified hrp fragments. The restriction banding patterns of all strains within each group were identical. In contrast, restriction fragment length polymorphism was evident among strains of the moderately and weakly aggressive groups of *X. campestris* pv. citrumelo. *X. campestris* pv. citrumelo strains in the highly aggressive group had a homogeneous restriction banding pattern. The characteristic banding patterns obtained for each bacterial group indicate that *X. campestris* strains causing disease in citrus can be reliably differentiated and identified by restriction analysis of amplified DNA fragments of the hrp gene cluster. In addition, the phylogenetic analysis based on the restriction banding patterns of amplified fragments suggests a polyphyletic relationship of the hrp genes among the strains of *X. campestris* that cause disease in citrus.

Record 36 of 298 - AGRICOLA 1992-1997

AN: IND 20377889
UD: 9404
AU: Graham,-J.H.; Gottwald,-T.R.
TI: Research perspectives on eradication of citrus bacterial diseases in Florida.
SO: Plant-dis. [St. Paul, Minn., American Phytopathological Society]. Dec 1991. v. 75 (12) p. 1193-1200.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1991
LA: English
CP: Minnesota; USA
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
SF: IND
DE: citrus-. xanthomonas-campestris-pv.-citri. xanthomonas-campestris. plant-diseases. cankers-. plant-disease-control. epidemiology-. agricultural-research. research-projects. florida-.
ID: citrus-bacterial-spot. asian-citrus-canker. xanthomonas-campestris-pv.-citrumelo.
CC: F832

Record 37 of 298 - AGRICOLA 1992-1997

AN: IND 20377194
UD: 9404
AU: Graham,-J.H.; Gottwald,-T.R.; Civerolo,-E.L.; McGuire,-R.G.
TI: Population dynamics and survival of *Xanthomonas campestris* in soil in citrus nurseries in Maryland and Argentina.

SO: Plant-dis. [St. Paul, Minn., American Phytopathological Society]. May 1989. v. 73 (5) p. 423-427.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1989
LA: English
CP: Minnesota; USA
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
SF: IND
DE: citrus-paradisi-x-poncirus-trifoliata. citrus-sinensis. citrus-paradisi. xanthomonas-campestris.
xanthomonas-campestris-pv.-citri. population-density. population-dynamics. survival-. nurseries-. agricultural-soils.
leaf-spotting. plant-diseases. maryland-. argentina-.
ID: citrus-bacterial-spot. asiatic-citrus-canker.
CC: F832

Record 38 of 298 - AGRICOLA 1992-1997

AN: IND 20360505
UD: 9401
AU: Gottwald,-T.R.; Graham,-J.H.; Civerolo,-E.L.; Barrett,-H.C.; Hearn,-C.J.
TI: Differential host range reaction of citrus and citrus relatives to citrus canker and citrus bacterial spot
determined by leaf mesophyll susceptibility.
SO: Plant-dis. [St. Paul, Minn., American Phytopathological Society]. Oct 1993. v. 77 (10) p. 1004-1009.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1993
LA: English
CP: Minnesota; USA
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
SF: IND
DE: citrus-. species-. cultivars-. xanthomonas-campestris. xanthomonas-campestris-pv.-citri. bacterial-diseases.
host-range. varietal-resistance. leaves-. mesophyll-. lesions-. epidemiology-.
ID: xanthomonas-campestris-pv.-citrumelo.
CC: F832; F200

Record 39 of 298 - AGRICOLA 1992-1997

AN: IND 93044908
UD: 9309
AU: Liu,-T.S.; He,-S.H.; Cheng,-Y.B.
TI: Screening of new chemicals to control citrus canker.
SO: Proceedings of the International Citrus Symposium Guangzhou, China, Nov 5-8, 1990 / edited by Huang
Bangyan, Yang Qian. [Beijing] : International Academic Publishers, c1991.. p. 616-619.
CN: DNAL SB369.I55-1990
PA: Foreign
PY: 1991
LA: English
IS: ISBN: 7800031624
NT: Includes references.
PT: Article
DE: citrus-. xanthomonas-. plant-disease-control.

ID: xanthomonas-citri.
CC: F832
XAU: Nanyue Subtropical Botanical Research Institute, Hunan, China.

Record 40 of 298 - AGRICOLA 1992-1997

AN: IND 93040702
UD: 9308
AU: Verniere,-C.; Pruvost,-O.; Civerolo,-E.L.; Gambin,-O.; Jacquemoud-Collet,-J.P.; Luisetti,-J.
TI: Evaluation of the Biolog substrate utilization system to identify and assess metabolic variation among strains of *Xanthomonas campestris* pv. citri.
SO: Appl-Environ-Microbiol. Washington, D.C. : American Society for Microbiology. Jan 1993. v. 59 (1) p. 243-249.
CN: DNAL 448.3-AP5
PA: Other-US
PY: 1993
LA: English
CO: AEMIDF
IS: ISSN: 0099-2240
NT: Includes references.
PT: Article
DE: xanthomonas-campestris-pv.-citri. strains-. identification-. carbohydrate-metabolism. amino-acid-metabolism. organic-acids. metabolism-. strain-differences. databases-. computer-software.
ID: metabolic-footprinting.
CC: F832
AB: Metabolic fingerprints of 148 strains of *Xanthomonas campestris* pv. citri originating from 24 countries and associated with various forms of citrus bacterial canker disease (CBCD) were obtained by using the Biolog substrate utilization system. Metabolic profiles were used to attempt strain identification. Only 6.8% of the studied strains were correctly identified when the commercial Microlog 2N data base was used alone. When the data base was supplemented with data from 54 strains of *X. campestris* pv. citri (40 CBCD-A strains, 8 CBCD-B strains, and 6 CBCD-C strains) and data from 43 strains of *X. campestris* associated with citrus bacterial spot disease, the percentage of correct identifications was 70%. Thus, it is recommended that users supplement the commercial data base with additional data prior to using the program for identification purposes. The utilization of Tween 40 in conjunction with other tests can help to differentiate strains associated with CBCD and citrus bacterial spot disease. These results confirmed the separation of *X. campestris* pv. citri into different subgroups (strains associated with Asiatic citrus canker [CBCD-A], canker B [CBCD-B], and Mexican lime canker [CBCD-C]). The utilization of L-fucose, D-galactose, and alaninamide can be used as markers to differentiate strains associated with these groups. A single strain associated with bacteriosis of Mexican lime in Mexico (CBCD-D) was closely similar to CBCD-B strains.
XAU: CIRAD/IRFA, Saint Pierre, Reunion Island, Beaucauze, France.

Record 41 of 298 - AGRICOLA 1992-1997

AN: IND 93008581
UD: 9303
AU: Graham,-J.H.; Gottwald,-T.R.; Riley,-T.D.; Achor,-D.
TI: Penetration through leaf stomata and strains of *Xanthomonas campestris* in citrus cultivars varying in susceptibility to bacterial diseases.
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Nov 1992. v. 82 (11) p. 1319-1325.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1992
LA: English
CO: PHYTA
IS: ISSN: 0031-949X
NT: Includes references.

PT: Article

DE: citrus-paradisi. citrus-sinensis. citrus-aurantium. citrus-reticulata. hybrids-. citrus-paradisi-x-poncirus-trifoliata. citrus-paradisi-x-citrus-reticulata. xanthomonas-campestris-pv.-citri. xanthomonas-campestris. infectivity-. leaves-. stomata-. growth-. pathogenicity-. susceptibility-. quantitative-analysis. cultivars-. disease-resistance. florida-.

ID: xanthomonas-campestris-pv.-citrumelo.

CC: F832; F200

AB: Leaf stomata and the pressures required to effect water congestion of tissue and bacterial penetration and growth in leaves were compared for selected cultivars of citrus species and relatives that vary in susceptibility to Asiatic citrus canker and citrus bacterial spot caused by *Xanthomonas campestris* pv. citri and *X. c.* pv. citrumelo, respectively. The differences among cultivars in structure and density of stomata on leaves expanded by two thirds (most susceptible stage to infection) and leaves fully expanded (least susceptible) were not related to previously reported susceptibility to citrus canker. Leaves, two-thirds expanded, of citrus cultivars were inoculated with *X. c.* citri or *X. c.* citrumelo after pretreatment at three impact pressures to yield incipient water congestion of tissue, full congestion, and congestion with damage to the epidermis. The number of lesions of citrus canker and citrus bacterial spot increased with degree of water congestion, but there was no interaction among cultivars with impact pressure. The number of bacteria that penetrated and the growth of either *X. c.* citri or *X. c.* citrumelo in leaves did not vary significantly among cultivars from 5 to 48 h. Populations continued to increase up to 168 h in citrus cultivars susceptible to citrus canker and in trifoliate orange and its hybrids susceptible to citrus bacterial spot. After 48-72 h, populations of *X. c.* citri were significantly lower in Cleopatra mandarin and in trifoliate orange, which are moderately resistant to citrus canker, and growth of *X. c.* citrumelo ceased in citrus species that are highly resistant to citrus bacterial spot. The number of bacteria recovered from within the infiltrated area at 5 h corresponded with the number of lesions of citrus canker and citrus bacterial spot at 168 h, suggesting that individual lesions developed from infections of stomata. In susceptible cultivars, lesion development was often correlated with bacterial populations at 168 h, but these factors were not correlated in cultivars resistant to citrus bacterial spot. Thus, resistance of citrus leaf tissue was expressed not as reduction in the number of bacteria that penetrated through stomata, but as a reduction in bacterial growth after 72 h.

XAU: University of Florida, Lake Alfred, FL.

Record 42 of 298 - AGRICOLA 1992-1997

AN: IND 93000263

UD: 9302

AU: Timmer,-L.W.

TI: Evaluation of bactericides for control of citrus canker in Argentina.

SO: Proc-Annu-Meet-Fla-State-Hortic-Soc. [S.l.] : The Society. 1988 (pub. May 1989). v. 101 p. 6-9.

CN: DNAL SB319.2.F6F56

PA: Other-US

PY: 1988

LA: English

IS: ISSN: 0886-7283

NT: Includes references.

PT: Article

DE: citrus-sinensis. xanthomonas-campestris-pv.-citri. bactericides-. disease-control. argentina-.

CC: F832

XAU: University of Florida, IFAS, Lake Alfred, FL.

Record 43 of 298 - AGRICOLA 1992-1997

AN: IND 92069876

UD: 9212

AU: Broadbent,-P.; Fahy,-P.C.; Gillings,-M.R.; Bradley,-J.K.; Barnes,-D.

TI: Asiatic citrus canker detected in a Pummelo orchard in northern Australia.

SO: Plant-Dis. St. Paul, Minn. : American Phytopathological Society. Aug 1992. v. 76 (8) p. 824-829.

CN: DNAL 1.9-P69P

PA: Other-US

PY: 1992
LA: English
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
DE: citrus-maxima. xanthomonas-campestris-pv.-citri. strains-. cankers-. detection-. characterization-. identification-. fatty-acids. dna-. comparisons-. strain-differences. hosts-of-plant-pests. pathogenicity-. symptoms-. disease-surveys. outbreaks-. australia-.
CC: F832
XAU: NSW Agriculture, Rydalmere, Australia.

Record 44 of 298 - AGRICOLA 1992-1997

AN: IND 92069146
UD: 9212
AU: Gottwald,-T.R.; Reynolds,-K.M.; Campbell,-C.L.; Timmer,-L.W.
TI: Spatial and spatiotemporal autocorrelation analysis of citrus canker epidemics in citrus nurseries and groves in Argentina.
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Aug 1992. v. 82 (8) p. 843-851.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1992
LA: English
CO: PHYTA
IS: ISSN: 0031-949X
NT: Includes references.
PT: Article
DE: citrus-sinensis. citrus-paradisi. poncirus-trifoliata. xanthomonas-campestris-pv.-citri. pathogenicity-. epidemics-. disease-surveys. spatial-distribution. correlation-. analysis-. argentina-.
CC: F832; X100
AB: Spatial and spatiotemporal (ST) patterns of citrus canker were examined in three nurseries and two groves in Argentina. The center plant in each plot was inoculated with *Xanthomonas campestris* pv. *citri*, and disease was allowed to progress for two growing seasons. Disease assessments were made at about 21-day intervals. Final disease incidence was >90% in all three nurseries and reached 69 and 89% for orange (*Citrus sinensis*) and grapefruit (*C. X paradisi*) groves, respectively. For nursery plots, each quadrat was represented by disease counts, i.e., the number of diseased leaves, in a six-plant row segment. For grove plots, each individual tree was considered a quadrat because of the large number of leaves per tree. Data from each assessment date were analyzed by spatial correlation analysis and by ST autocorrelation analysis. Changes in significantly correlated spatial lags closely followed the changes in the disease progress curves for each plot. Proximity patterns in all three nurseries changed little during the first three to four assessments and then became more complex, often with noncontiguous elements that indicated the formation of secondary foci. Noncontiguous elements remained until the last few assessments, when they eroded and the proximity patterns generally became larger and contiguous as the numerous foci coalesced. Disease incidence increased more rapidly in the grove plots than in the nursery plots. Spatial proximity patterns of disease for the grapefruit grove plot, corresponding to assessment dates immediately after a rainstorm with high winds, were elongated in the north-south direction. In contrast, spatial proximity patterns in the orange grove plot were more radially symmetrical until later in the epidemic, when they became more elongate in the north-south orientation and a few noncontiguous elements developed. ST autocorrelations and partial autocorrelations from the ST autocorrelation analysis of nurseries and groves were generally highest with a square proximity pattern. For citrus nurseries, ST autocorrelations and partial autocorrelations were consistent over time. ST autocorrelations decayed rapidly over spatial lags, but remained significant to four temporal lags. Therefore, the ST transfer function for citrus nurseries infected with citrus canker was represented by a ST autoregressive integrated moving-average (STARIMA) model, STARIMA(0,4,1,1). The ST partial autocorrelations were similar for both grove plots, indicating a similarity in the autoregressive components of each grove and, thus, a STARIMA model structure, but the two groves differed in inclusion of moving-average terms. For the orange grove, autocorrelations for the first temporal lag decayed slowly over the first three spatial lags, whereas the autocorrelation

for the first temporal lag in the grapefruit grove decayed rapidly over spatial lags. Also, significant moving-average effects were estimated to extend to two temporal lags in the grapefruit grove data but to only one in the orange grove data. Thus, STARIMA model forms for the orange and grapefruit groves were estimated to be STARIMA(0,1,4,1) and STARIMA(0,2,1,2), respectively.

XAU: USDA, ARS, Horticultural Research Laboratory, Orlando, FL.

Record 45 of 298 - AGRICOLA 1992-1997

AN: IND 92062690

UD: 9211

AU: Gottwald,-T.R.; Graham,-J.H.

TI: A device for precise and nondisruptive stomatal inoculation of leaf tissue with bacterial pathogens.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Sept 1992. v. 82 (9) p. 930-935.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1992

LA: English

CO: PHYTA

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

DE: xanthomonas-campestris. citrus-. xanthomonas-campestris-pv.-citri. infectivity-. laboratory-equipment. stomata-. water-stress.

ID: xanthomonas-campestris-pv.-citrumelo. citrus-bacterial-spot. citrus-canker.

CC: F832

AB: A stomatal inoculation apparatus (SIA) was developed to produce water congestion of leaf tissues and provide a reproducible noninjurious means of introducing two *Xanthomonas campestris* pathovars of citrus into leaf tissues without wounding. The SIA consisted of a small inoculation chamber attached to an intact leaf. Water and inoculum were metered into an airstream and focused to impact on a 1-mm-diameter area of the leaf surface. Leaf tissues on the abaxial surface of Duncan grapefruit leaves expanded 50-75% were more susceptible to infection than were other growth stages. Inoculum concentrations of 10(6) cfu/ml consistently induced infection and resulted in discrete individual lesions. Airstream impact pressures of 6.28-8.04 kPa against the leaf surface consistently produced tissue congestion and infection without wounding. These same pressures were the minimum threshold for increasing water volume in the leaf. From calculations of volume versus concentration of inoculum that enters a leaf via SIA, it was determined that as few as 2 cfu were required to cause a single lesion.

XAU: ARS, USDA, Orlando, FL.

Record 46 of 298 - AGRICOLA 1992-1997

AN: IND 92043504

UD: 9208

AU: Graham,-J.H.; Gottwald,-T.R.; Riley,-T.D.; Bruce,-M.A.

TI: Susceptibility of citrus fruit to bacterial spot and citrus canker.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Apr 1992. v. 82 (4) p. 452-457.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1992

LA: English

CO: PHYTA

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

DE: citrus-paradisi. citrus-sinensis. citrus-paradisi-x-citrus-reticulata. species-differences. susceptibility-. xanthomonas-campestris-pv.-citri. pathotypes-. xanthomonas-campestris. strains-. pathogenicity-. strain-differences. host-specificity. fruits-. size-. florida-.

ID: xanthomonas-campestris-pv.-citrumelo.

CC: F832

AB: A pressurized spray (1 g/mm²) that water-soaked the rind of citrus fruit was used to obtain infection by *Xanthomonas campestris* pv. citri, *X. c. citrumelo*, and other *X. campestris* pathovars capable of infecting leaves of the citrus hybrid Swingle citrumelo (*Poncirus trifoliata* X *Citrus paradisi*). An aggressive strain of *X. c. citrumelo* readily infected fruit 20-M mm in diameter, but fruit of smaller and larger diameters were not as susceptible. Marsh White and Marsh Red grapefruit cultivars developed larger lesions over a wider range of fruit sizes compared with Hamlin and Valencia sweet orange and Orlando tangelo. After 28 days, lesions caused by *X. c. citrumelo* strains did not expand further into rind tissue. Resistance of fruit to several strains of *X. c. citrumelo* and other pathovars of *X. campestris*, both of which produced small, discrete lesions, was confirmed by the inability of these strains to multiply in the rind tissue of Marsh White grapefruit. Nearly all strains of *X. c. citrumelo* were also incapable of sustaining growth and lesion expansion in leaf tissue of Ruby Red grapefruit and Swingle citrumelo; exceptions were aggressive strains, which produced expanding lesions on Swingle citrumelo. The relationship between fruit size and infection of citrus fruit cultivars by an Asiatic strain of *X. c. citri* was similar to that for *X. c. citrumelo*. Red Blush grapefruit was more susceptible to Asiatic citrus canker than Hamlin sweet orange, whereas Capurro mandarin was resistant. Unlike lesions produced by *X. c. citrumelo*, canker lesions continued to expand up to 106 days after inoculation of fruit 20-40 mm in diameter. Lesions did not expand on fruit >60 mm in diameter.

XAU: University of Florida, Lake Alfred.

Record 47 of 298 - AGRICOLA 1992-1997

AN: IND 92038101

UD: 9207

AU: Gottwald,-T.R.; Graham,-J.H.; Engel,-D.S.

TI: Analysis of foci of Asiatic citrus canker in a Florida citrus orchard.

SO: Plant-Dis. St. Paul, Minn. : American Phytopathological Society. Apr 1992. v. 76 (4) p. 389-396.

CN: DNAL 1.9-P69P

PA: Other-US

PY: 1992

LA: English

CO: PLDIDE

IS: ISSN: 0191-2917

NT: Includes references.

PT: Article

DE: citrus-. xanthomonas-campestris-pv.-citri. disease-transmission. infectivity-. epidemics-. disease-surveys. climatic-factors. spatial-distribution. inoculum-. florida-.

CC: F832

XAU: USDA, ARS, Orlando, FL.

Record 48 of 298 - AGRICOLA 1992-1997

AN: IND 91051855

UD: 9201

AU: Stall,-R.E.; Civerolo,-E.L.

TI: Research relating to the recent outbreak of citrus canker in Florida.

SO: Annu-Rev-Phytopathol. Palo Alto, Calif. : Annual Reviews, Inc. 1991. v. 29 p. 399-420.

CN: DNAL 464.8-AN72

PA: Other-US

PY: 1991

LA: English

CO: APPYA

IS: ISSN: 0066-4286

NT: Literature review.

Includes references.

PT: Article

DE: citrus-. xanthomonas-campestris-pv.-citri. epidemics-. disease-distribution. symptoms-. cankers-. plant-disease-control. agricultural-research. research-projects. etiology-. epidemiology-. strain-differences.

serological-relationships. genetic-analysis. literature-reviews. florida-.

ID: bacterial-spot-of-citrus.

CC: F832

XAU: University of Florida, Gainesville, FL.

Record 49 of 298 - AGRICOLA 1992-1997

AN: IND 91051474

UD: 9201

AU: Ferguson,-J.J.

TI: Citrus canker in dooryard plantings.

SO: Fruit-Crops-Facts-Sheet. Gainesville, Fla. : University of Florida, Agricultural Extension Service. 1984. (73) 2 p.

CN: DNAL SB354.F693

PA: Extension-Service-State-Agriculture

PY: 1984

LA: English

IS: ISSN: 1054-8319

PT: Article

DE: citrus-. cankers-. florida-.

CC: F832

XAU: University of Florida, Gainesville.

Record 50 of 298 - AGRICOLA 1992-1997

AN: IND 91050893

UD: 9201

AU: Ferguson,-J.

TI: Citrus canker.

SO: Fruit-Crops-Facts-Sheet. Gainesville, Fla. : University of Florida, Agricultural Extension Service. 1987. (72) 4 p.

CN: DNAL SB354.F693

PA: Extension-Service-State-Agriculture

PY: 1987

LA: English

IS: ISSN: 1054-8319

NT: Includes references.

PT: Article

DE: xanthomonas-campestris-pv.-citri. cankers-. infection-. plant-disease-control. florida-.

CC: F832

XAU: University of Florida, Gainesville, FL.

Record 51 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 789068234

UD: 7806

AU: Failco-de-Alcaraz,-L-M

TI: Variability of Xanthomonas citri (Hasse) Dow. [pathogen of citrus canker] in strains from different sources

OT: Variabilidad de Xanthomonas citri (Hasse) dow. en aislamientos de distinta procedencia

SO: Fitopatologia, May 1977, 12 (1): 6-14. Ref. Eng. sum.

CN: DNAL SB599.F5

PY: 1977

LA: Spanish

PT: Article

CC: 4510

Record 52 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 789107660
UD: 7808
AU: Koizumi,-M
TI: Behaviour of *Xanthomonas citri* (Hasse) Dowson and histological changes of diseased tissues in the process of lesion extension [Citrus canker]
SO: Ann-Phytopathol-Soc-Jap, Apr 1977, 43 (2): 129-136. Plates. Ref. Eng. sum.
CN: DNAL 464.9-P562
PY: 1977
LA: Japanese
PT: Article
CC: 4510

Record 53 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 789165434
UD: 7812
AU: Crandall,-M-A
TI: There's an enemy lurking at the door [Citrus canker, *Xanthomonas citri*]
SO: Fla-Grower-and-Rancher, Oct 1978, 71 (9): 12, 14.
CN: DNAL 80-F6622
PA: Other-US
PY: 1978
LA: English
PT: Article
CC: 4510

Record 54 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 779008896
UD: 7702
AU: Moreira,-S
TI: A citrus canker [caused by *Xanthomonas citri*] is threatening Brazilian citrus growing
OT: Cancro citrico-ameaca a citricultura brasileira
SO: Rev-Agric-Piracicaba, Oct 1975, 50 (1/2): 79-84.
CN: DNAL 9.2-R324
PY: 1975
LA: Portuguese
PT: Article
ID: Brazil-
CC: 4510

Record 55 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 779010552
UD: 7703
AU: Koizumi,-M
TI: Behavior of *Xanthomonas citri* (Hasse) Dowson [citrus canker] in the infection process. i. multiplication of the bacteria and histological changes following needle-prick inoculation
SO: Ann-Phytopathol-Soc-Jap, Sept 1976, 42 (4): 407-416. Ref. Eng. sum.
CN: DNAL 464.9-P562
PY: 1976
LA: Japanese
PT: Article
CC: 4510

Record 56 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 779053396
UD: 7707
AU: Koizumi,-M
TI: Incubation period of citrus canker [*Xanthomonas citri*] in relation to temperature
SO: Kaju-Shikenjo-Hokoku-B-Okitsu, Mar 1976, 3: 33-46. Eng. Sum.
CN: DNAL SB354.6.J3K36A
PY: 1976
LA: Japanese
PT: Article
CC: 4510

Record 57 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 779056648
UD: 7707
AU: Pereira,-A-L-G; Watanabe,-K; Zagato,-A-G; Cianiulli,-P-L
TI: Survival of *Xanthomonas citri* (Hasse) Dowson [the causal agent of citrus canker] on sourgrass (*Trichachne insularis* (L.) Nees) from eradicated orchards in the State of Sao Paulo, Brazil
OT: Sobrevivencia de *Xanthomonas citri* (Hasse) Dowson em capim amargoso (*Trichachne insularis* (L.) Nees) de pomares eradicados, no Estado de Sao Paulo
SO: Biologico, Nov/Dec 1976, 42 (11/12): 217-221. Eng. sum.
CN: DNAL 442.8-B529
PY: 1976
LA: Portuguese
PT: Article
ID: Brazil-
CC: 4510

Record 58 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 769079812
UD: 7609
AU: Singh,-K-P; Kaleem,-M; Edward,-J-C
TI: Changes in the free amino acids of citrus leaves in relation to citrus greening [of musambi] and citrus canker [on kinnow]
SO: Curr-Sci, July 5, 1976, 45 (13): 502-503.
CN: DNAL 475-SCI23
PY: 1976
LA: English
PT: Article
CC: 4520

Record 59 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 769105021
UD: 7612
AU: Kapur,-S-P; Cheema,-S-S
TI: Citrus canker [*Xanthomonas citri*] and its control
SO: Prog-Farming, Apr 1976, 12 (8): 5.
CN: DNAL S19.P7
PY: 1976
LA: English
PT: Article

CC: 4510

Record 60 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 759005329

UD: 7502

AU: Serizawa,-S; Inoue,-K

TI: Studies on citrus canker, *Xanthomonas citri*. III. The influence of wind on the infection of citrus canker

SO: Bull-Shizuoka-Prefect-Citrus-Exp-Stn-Komagoe-Shimizu-City-Jap, Mar 1974, 11: 54-67. Ref. Eng. sum.

CN: DNAL 93.33-SH62B

PY: 1974

LA: Japanese

PT: Article

CC: 4510

Record 61 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 759055731

UD: 7507

AU: Nonaka,-F; Yamaguchi,-S; Ota,-T

TI: A phytoalexin-like substance isolated from leaves infected with citrus canker [*Xanthomonas citri*] and its antifungal action

SO: Proc-Assoc-Plant-Prot-Kyushu, 1974, 20: 97-99. Eng. sum.

CN: DNAL SB599.K9

PY: 1974

LA: Japanese

PT: Article

CC: 4510

Record 62 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 759082347

UD: 7510

AU: Serizawa,-S

TI: Control of citrus canker disease caused by *Xanthomonas citri*

SO: Shokubutsu-Boeki, Jan 1975, 29 (1): 20-26. Ref.

CN: DNAL 421-J27

PY: 1975

LA: Japanese

PT: Article

CC: 4510

Record 63 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 749008328

UD: 7402

AU: Mathar,-A-S; Irulappan,-I; Krishnamurthy,-C-S; Rajappan,-P-V; Gowder,-R-B

TI: Efficacy of different fungicides and antibiotics on the control of citrus canker caused by *Xanthomonas citri* (Hasse) Dowson

SO: Madras-Agric-J, July 1973, 60 (7): 626.

CN: DNAL 22-M262

PY: 1973

LA: English

PT: Article

CC: 4510

Record 64 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 749024483
UD: 7404
AU: Kishore,-V; Chand,-J-N
TI: Citrus canker in Haryana. [Xanthomonas citri, India]
SO: J-Res-Haryana-Agric-Univ, June 1972 (Pub. Oct 1973), 2 (2): 124-127. Ref.
CN: DNAL S19.J68
PY: 1973
LA: English
PT: Article
ID: India-
CC: 4505

Record 65 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 739129945
UD: 7302
AU: Wu,-W-C
TI: Phage-induced alterations of cell disposition, phage adsorption and sensitivity, and virulence in Xanthomonas citri. [Citrus, canker]
SO: Phytopathol-Soc-Jap-Ann, Sept 1972, 38 (4): 333-341. Ref.
CN: DNAL 464.9-P562
PY: 1972
LA: English
PT: Article
CC: 4510

Record 66 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 739189799
UD: 7308
AU: Ram,-G; Nirwan,-R-S; Saxana,-M-L
TI: Citrus canker and its control with fungicides. [Xanthomonas citric]
SO: Punjab-Hortic-J, Oct/Dec 1972, 12 (4): 240-243.
CN: DNAL SB13.P8
PY: 1972
LA: English
PT: Article
CC: 4510; 4505

Record 67 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 739217970
UD: 7311
AU: Koizumi,-M
TI: Studies on the symptoms of citrus canker formed on Satsuma mandarin fruit and existence of causal bacteria in the affected tissues. [Xanthomonas citri]
SO: Bull-Hortic-Res-Stn-Okitsu, Dec 1972, (ser. B) 12: 229-243. Ref. Eng. sum.
CN: DNAL 87-OK323
PY: 1972
LA: Japanese
PT: Article
CC: 4510

Record 68 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729052093
UD: 7206
AU: Serizawa,-S
TI: Studies on citrus canker. iI. pathogenicity of the Xanthomonas citri strains
SO: Shizuoka-Citrus-Exp-Sta-Bull, Mar 1972, 9: 89-96. Eng. sum.
CN: DNAL 93.33-SH62B
PY: 1972
LA: Japanese
PT: Article
CC: 4510

Record 69 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729067593
UD: 7208
AU: Goto,-M; Serizawa,-S; Morita,-M
TI: Studies on citrus canker disease. iI. leaf infiltration technique for detection of Xanthomonas citri (Hasse) Dowson, with special reference to comparison with phage method
SO: Rev-Plant-Prot-Res, 1971, 4: 108-111.
CN: DNAL SB599.R43
PA: Translation
PY: 1971
LA: English
NT: Translated from Shizuoka Univ. fac. agric. bulletin 20: 1-19. 1970. (107.6 in92)
PT: Article
CC: 4510

Record 70 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729072696
UD: 7208
AU: Fuentes,-F-D
TI: The effects of climatic factors on the onset and development of diseases in Catarman, Northern Samar. i. the interrelated effects of some meteorological factors on the onset and development of citrus canker at Catarman, N. samar
SO: Researcher, Aug 1970, 6 (2): 74-85. Ref.
CN: DNAL Q181.A1R4
PY: 1970
LA: English
PT: Article
CC: 4520

Record 71 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729078746
UD: 7209
AU: Sinha,-M-K; Batra,-R-C; Uppal,-D-K
TI: Role of citrus leaf-miner (Phyllocnistis citrella Staintan), on the prevalence and severity of citrus canker (Xanthomonas citri (Hasse) Dowson)
SO: Madras-Agr-J, Apr 1972, 59 (4): 240-245.
CN: DNAL 22-M262
PY: 1972
LA: English
PT: Article
CC: 4540; 4510

Record 72 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729081575
UD: 7209
AU: Wu,-W-C
TI: Phage-induced alteration of colony type in *Xanthomonas citri*. [Citrus, canker]
SO: Phytopathol-Soc-Jap-Ann, 38, 38 (2): 146-155. Ref.
CN: DNAL 464.9-P562
PY: 1972
LA: English
PT: Article
CC: 4510

Record 73 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 729114875
UD: 7301
AU: Shahare,-K-C
TI: Streptocycline' against citrus canker disease. [*Xanthomonas citri*]
SO: Plant-Prot-Bull-New-Delhi, 1970 (Pub. 1972), 22 (3): 38-39.
CN: DNAL 421-P69
PY: 1972
LA: English
PT: Article
CC: 4510

Record 74 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 719054339
UD: 7108
AU: Yadav,-R-K-S
TI: You can control citrus canker
SO: Intensive-Agr, Aug 1970, 8 (6): 11.
CN: DNAL 22-IN8
PY: 1970
LA: English
PT: Article
CC: 7000

Record 75 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 709008245
UD: 7003
AU: Sakata,-H; Ohta,-T; Nishino,-T; Ohgushi,-R
TI: Studies on the spray program for the control of citrus canker. 2. Effect of spraying time for the control of infestation upon fruit
SO: Kyushu-Assoc-Plant-Protect-Proc, 1968, 14:82-83.
CN: DNAL SB599.K9
PY: 1968
LA: Japanese
NT: English summary.
PT: Article
CC: 7000

Record 76 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 709078078
UD: 7012
AU: Ohta,-T
TI: Studies on the period of infection with citrus canker of spring leaves and fruits
SO: Kyushu-Assoc-Plant-Protect-Proc, 1969, 15: 57-59.
CN: DNAL SB599.K9
PY: 1969
LA: Japanese
NT: English summary.
PT: Article
CC: 7000

Record 77 of 298 - AGRICOLA (1970 - 1978)

AN: CAIN 709078079
UD: 7012
AU: Iwasa,-T; Ohta,-T; Morita,-A
TI: Studies on the spray program for the control of citrus canker. 3
SO: Kyushu-Assoc-Plant-Protect-Proc, 1969, 15: 59-61.
CN: DNAL SB599.K9
PY: 1969
LA: Japanese
NT: English summary.
PT: Article
CC: 7000

Record 78 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 91045968
UD: 9112
AU: Alvarez,-A.M.; Benedict,-A.A.; Mizumoto,-C.Y.; Pollard,-L.W.; Civerolo,-E.L.
TI: Analysis of *Xanthomonas campestris* pv. *citri* and *X. c. citrumelo* with monoclonal antibodies.
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Aug 1991. v. 81 (8) p. 857-865.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1991
LA: English
CO: PHYTA
IS: ISSN: 0031-949X
NT: Includes references.
PT: Article
DE: *xanthomonas-campestris*-pv.-*citri*. *xanthomonas-campestris*. serological-relationships. monoclonal-antibodies. lipopolysaccharides-. antigenic-determinants. cross-reaction. strain-differences. pathotypes-. physiological-races. isolation-. cankers-. plant-diseases. citrus-. *cordyline-fruticosa*. virulence-. pathogenicity-.
ID: citrus-bacterial-spot. antigenic-relationships. citrus-bacterial-canker.
CC: F832
AB: A monoclonal antibody (MAb), designated A1, reacted with lipopolysaccharide (LPS) epitopes of all tested strains of *Xanthomonas campestris* pv. *citri* isolated from the Asiatic form of citrus bacterial canker (CBC-A), with *X. campestris* strains pathogenic on *ti* (*Cordyline terminalis*), and with some Florida citrus nursery strains associated with citrus bacterial spot (CBS) disease. The A1 MAb did not react with strains associated with other forms of citrus canker (B, C, or D). Except for weak reactions with *X. c. manihotis*, MAb A1 did not react with 130 other *Xanthomonas* pathovars and species or with 89 strains of other genera. In contrast, the titers of a rabbit-anti-CBC-A antiserum with several other *X. campestris* pathovars were as high as titers with some CBC-A strains. A second MAb, A2, reacted only with a flagellar epitope associated with CP1 bacteriophage-sensitive CBC-A strains. The CBC-B strains appeared to be antigenically heterogeneous, because no MAb was produced that reacted with all

CBC-B strains; however, the CBC-B strains were grouped by reactions to three MAbs specific for LPS epitopes. One CBC-B MAb, B2, indicated a close antigenic relationship between strains in groups B, C, and D. Another MAb, C1, specific for CBC-C strain XC70 reacted with a heat-sensitive epitope associated with a molecule partially sensitive to proteolytic enzymes. MAbs (T1 and T2) specific for weakly virulent strains isolated in Mexico from *Citrus aurantifolia* (Mexican lime) did not react with any other strains from citrus. CBS strains from Florida were serologically heterogeneous but distinct from strains associated with CBC. Most of the strongly aggressive CBS strains reacted with a MAb (CBS 1) generated to a strongly aggressive strain, whereas most moderately and weakly aggressive strains reacted with MAb Xct generated to a *X. campestris* pathogen of ti. Moderately to weakly aggressive CBS strains reacted with MAb A1 but those strains also reacted with MAb Xct, whereas CBC-A strains did not. The LPS banding patterns of CBC-A strains were similar to each other, with major bands at an average Mr of 80,000, and were distinguished from the LPS patterns of A1-positive CBS, ti, and *X. c. manihotis* strains (major bands at an average Mr of 60,000).

XAU: University of Hawaii, Honolulu, HI.

Record 79 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 91043290

UD: 9112

AU: Egel,-D.S.; Graham,-J.H.; Riley,-T.D.

TI: Population dynamics of strains of *Xanthomonas campestris* differing in aggressiveness on Swingle citrumelo and grapefruit.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. June 1991. v. 81 (6) p. 666-671.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1991

LA: English

CO: PHYTA

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

DE: citrus-paradisi-x-poncirus-trifoliata. citrus-paradisi. xanthomonas-campestris-pv.-citri.

xanthomonas-campestris. strains-. strain-differences. pathogenicity-. population-dynamics. lesions-.

host-parasite-relationships. epiphytes-. inoculum-. epidemiology-.

ID: xanthomonas-campestris-pv.-citrumelo.

CC: F832

AB: The aggressiveness of strains of *Xanthomonas campestris* causing citrus canker (*X. c. citri*) and citrus bacterial spot (*X. c. citrumelo*) on Swingle citrumelo and Duncan grapefruit was assessed by comparing lesion expansion and population development for these strains in greenhouse, growth chamber, and field experiments, using different inoculation techniques and sampling methods. When leaves were pinprick inoculated and resultant lesions sampled over time, there was a positive relationship between internal populations (detected upon macerating lesions) and external populations (detected by swabbing the surface of moist lesions) and between each population and lesion diameter for the different pathovars and aggressiveness types of *X. c. citrumelo*. Correlations among internal and external populations and lesion diameter were higher in the field than under dew-forming conditions in the growth chamber. A leaf-infiltration method revealed few differences in internal populations among pathovars and strains. Strain X host interactions based on the populations and expansion of lesions were apparent for the different aggressiveness types of *X. c. citrumelo* in the field. The highly aggressive strain of *X. c. citrumelo* on Swingle citrumelo most consistently produced the highest bacterial populations and largest lesions. In the field, internal populations were indicative of external populations and therefore might be predictive of the ability of a strain of *X. campestris* to spread on a given host.

XAU: University of Florida, Lake Alfred.

Record 80 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 91258999

UD: 9110

AU: Wolf,-Frederick-A. (Frederick Adolph), 1885-; Massey,-A.-B. (Arthur Ballard), 1889-

TI: Citrus canker.
ST: Circular (Alabama Polytechnic Institute. Agricultural Experiment Station) ; no. 27.
SO: Auburn : Alabama Agricultural Experiment Station of the Alabama Polytechnic Institute, 1914. p. 98-101 : ill.
CN: DNAL 100-ALIS-2-no.27
PA: Experiment-Station-State-Agriculture
PY: 1914
LA: English
CP: Alabama; USA
NT: Cover title.
"May, 1914."
PT: Monograph
SF: UIU
DE: Citrus-canker-Alabama.
CC: F832

Record 81 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 91014450
UD: 9105
AU: Ferguson,-J.; Schubert,-T.; Miller,-J.
TI: Citrus canker.
SO: Fruit-Crops-Facts-Sheet. Gainesville, Fla. : University of Florida, Agricultural Extension Service. 1984. (72) 4 p. ill.
CN: DNAL SB354.F693
PA: Extension-Service-State-Agriculture
PY: 1984
LA: English
NT: Includes references.
PT: Article
DE: citrus-. cankers-. florida-.
CC: F832
XAU: IFAS University of Florida, Gainesville.

Record 82 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 91011306
UD: 9104
AU: Timmer,-L.W.; Gottwald,-T.R.; Zitko,-S.E.
TI: Bacterial Exudation from lesions of Asiatic citrus canker and citrus bacterial spot.
SO: Plant-Dis. St. Paul, Minn. : American Phytopathological Society. Feb 1991. v. 75 (2) p. 192-195.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1991
LA: English
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
DE: citrus-paradisi. xanthomonas-campestris-pv.-citri. leaves-. pathogenesis-. symptoms-. exudates-. inoculum-density. disease-course. spread-. argentina-. florida-.
CC: F832
XAU: University of Florida, Institute of Food and Agricultural Sciences, Lake Alfred.

Record 83 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 90053815

UD: 9101
AU: Graham,-J.H.; Gottwald,-T.R.; Fardelmann,-D.
TI: Cultivar-specific interactions for strains of *Xanthomonas campestris* from Florida that cause citrus canker and citrus bacterial spot.
SO: Plant-Dis. St. Paul, Minn. : American Phytopathological Society. Oct 1990. v. 74 (10) p. 753-756.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1990
LA: English
CO: PLDIDE
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
DE: xanthomonas-campestris. cultivars-. interactions-. citrus-paradisi. poncirus-trifoliata. cankers-. bacterial-diseases. greenhouses-. florida-.
CC: F832
XAU: University of Florida.

Record 84 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 90943167
UD: 9012
AU: Menten,-J.-O.-M.
TI: Bud irradiation to obtain resistance to citrus canker through induction of mutation. Irradiacao de porbulhas [i.e. borbulhas] visando a obtencao de resistencia ao cancro citrico por inducao de mutacao.
OT: Irradiacao de porbulhas [i.e. borbulhas] visando a obtencao de resistencia ao cancro citrico por inducao de mutacao.
Irradiacao de borbulhas visando a obtencao de resistencia ao cancro citrico por inducao de mutacao.
SO: [Piracicaba, Brazil : Centro de Energia Nuclear na Agricultura, 1989] p. 362-371.
CN: DNAL SB359.35.I7
PA: Foreign
LA: Portuguese
CP: Virginia; USA
NT: Includes bibliographical references (p. 370-371).
PT: Monograph; Bibliography; Regular-Print
DE: Citrus-fruits-Mutation-breeding. Plant-mutation-breeding.
CC: F200

Record 85 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 90037063
UD: 9009
AU: Palazzo,-D.A.; Nogueira,-E.M.-de-C.; Ceravolo,-L.C.
TI: Citrus canker [*Xanthomonas campestris* pv. citri (Hase) Dye]: disease progress in time in the State of Sao Paulo, Brazil.
SO: Citriculture : proceedings of the Sixth International Citrus Congress : Middle-East, Tel Aviv, Israel, March 6-11, 1988 / scientific editors, R. Goren and K. Mendel, editor, N. Goren. Rehovot, Israel : Balaban, c1989. p. 1005-1011.
CN: DNAL SB369.I5-1988
PA: Foreign
PY: 1988
LA: English
IS: ISBN: 3823611364
NT: Includes references.
PT: Article
DE: citrus-sinensis. grafting-. rootstocks-. citrus-limonia. xanthomonas-campestris. disease-distribution.

seasonal-fluctuations. brazil-.

CC: F832

XAU: Instituto Biologico, Sao Paulo, Brazil.

Record 86 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 90027802

UD: 9007

AU: Timmer,-L.W.; Graham,-J.H.

TI: Florida citrus canker five years hence.

SO: Calif-Grow. Fallbrook, Calif. : The Tanis Group, Inc. Oct 1989. v. 13 (10) p. 14, 16, 18. ill.

CN: DNAL SB379.A9A9

PA: Other-US

PY: 1989

LA: English

IS: ISSN: 0888-1715

NT: Includes references.

PT: Article

DE: citrus-. cankers-. bacterial-diseases. florida-.

CC: F832

Record 87 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 90021487

UD: 9005

AU: Gottwald,-T.R.; Timmer,-L.W.; McGuire,-R.G.

TI: Analysis of disease progress of citrus canker in nurseries in Argentina.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Nov 1989. v. 79 (11) p. 1276-1283. ill.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1989

LA: English

CO: PHYTA

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

DE: citrus-sinensis. citrus-paradisi. poncirus-trifoliata. cankers-. xanthomonas-campestris. xanthomonas-citri. disease-transmission. disease-resistance. inoculum-. disease-distribution. nurseries-. argentina-.

ID: poncirus-trifoliata-x-citrus-paradisi. spatial-distribution. disease-severity.

CC: F832

AB: Three nursery plots of Duncan grapefruit, Pineapple sweet orange, and Swingle citrumelo rootstock were established in Concordia, Entre Rios, Argentina, to study the temporal increase and spatial spread of citrus bacterial canker from a single focal point. Focal trees of each cultivar were inoculated with *Xanthomonas campestris* pv. citri, the causal agent of Asiatic citrus bacterial canker, and planted in the center of each plot. Disease increase over time was measured as either disease severity (proportion of leaves infected per plant) or disease incidence (proportion of plants infected). Exponential, monomolecular, logistic, Gompertz, and Weibull models were tested for appropriateness by nonlinear regression analysis. The Gompertz model was superior for describing increase in disease incidence and disease severity in all three citrus nurseries. The rate of disease increase was greater in the most susceptible host, Duncan grapefruit, than in less susceptible hosts, Pineapple orange or Swingle. Disease spread coincided with rain splash dispersal and a rapid increase in the apparent infection rate after windblown rainstorms. Rate of disease spread was independent of wind direction. Aggregation of diseased plants was observed in all three nurseries throughout the duration of the tests. Aggregation of individuals appeared to be equivalent between and across rows, indicating that splash dispersal of inoculum was not impeded by between-row distances. Secondary foci were established early in the epidemics and soon overcame the effect of the original focus of disease. The slope of linearized disease gradients, $[-\ln(-\ln(y)) = a + b \ln(x)]$, where y = disease incidence and x = distance from the focus of infection in meters, fluctuated over time because of disease-induced defoliation of severely

infected plants. Defoliation of more severely diseased plants near the focus subsequently resulted in positive disease gradient slopes for the susceptible Duncan grapefruit nursery as disease levels near the focus diminished.
XAU: USDA, ARS, Horticultural Laboratory, Orlando, FL.

Record 88 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 90013432
UD: 9005
AU: Graham,-J.H.; Gottwald,-T.R.
TI: Variation in aggressiveness of *Xanthomonas campestris* pv. *citrumelo* associated with citrus bacterial spot in Florida citrus nurseries.
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Feb 1990. v. 80 (2) p. 190-196. ill.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1990
LA: English
CO: PHYTA
IS: ISSN: 0031-949X
NT: Includes references.
PT: Article
DE: citrus-aurantifolia. citrus-paradisi. xanthomonas-campestris. pathotypes-. characterization-. virulence-. pathogenicity-. colonizing-ability. disease-distribution. varietal-susceptibility. florida-.
ID: xanthomonas-campestris-pv.-citri. disease-incidence. disease-severity. spatial-distribution.
CC: F832; F200
AB: Reactions on wound-inoculated detached leaves of Swingle citrumelo and Duncan grapefruit were used to characterize strains of *Xanthomonas campestris* pv. *citrumelo* associated with citrus bacterial spot (CBS) in Florida citrus nurseries and to distinguish these strains from *X. c. citri*, the cause of Asiatic citrus canker. Strains of *X. c. citrumelo* varied in aggressiveness based on the extent and persistence of water-soaking and the development of necrosis. Aggressiveness on detached leaves was correlated with that on wound-inoculated leaves in the greenhouse and field. Reactions on detached leaves developed rapidly and could be evaluated after 7 days, whereas 30 days were required for the development of lesions on attached leaves. In vitro inoculations distinguished the flat-spreading lesions of CBS from the erumpent, calluslike reaction produced by *X. c. citri*. In four nurseries, the incidence, severity, and spatial distribution of CBS was related to strain aggressiveness. Only the most aggressive strains were associated with natural spread, whereas less aggressive strains were evidently spread mechanically by nursery operations. In one nursery, where strains varied from weakly to moderately aggressive, aggressiveness differed among separate disease foci. Strains from 25 unrelated nursery infestations were evaluated, and the most aggressive strains occurred in only four nurseries. More than 75% of the nursery-outbreaks were associated with Swingle citrumelo. This variety was more susceptible than Duncan grapefruit to the aggressive strain of *X. c. citrumelo* and less susceptible to *X. c. citri* in attached leaf tests. There were significant interactions of strains of *X. c. citrumelo* of different aggressiveness with the two citrus cultivars.
XAU: University of Florida, Lake Alfred.

Record 89 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 89930487
UD: 9001
CA: International Symposium of Citrus Canker, Declinio/Blight, and Similar Diseases (1987 : Sao Paulo, Brazil).
TI: International Symposium of Citrus Canker, Declinio/Blight and Similar Diseases : proceedings.
OT: Simposio Internacional de Cancro Citrico, Declinio e Doencas Similares das Plantas Citricas.
SO: Campinas, SP, Brasil : Fundacao Cargill, 1988. ix, 405 p. : ill. (some col.), maps
CN: DNAL SB608.C5I58-1987
PA: Foreign
PY: 1988
LA: English
CP: Brazil
NT: Includes bibliographical references.

PT: Monograph; Conference-Publication; Bibliography
DE: Citrus-canker-Congresses. Xanthomonas-campestris-Congresses. Citrus-fruits-Diseases-and-pests-Congresses.
CC: F832

Record 90 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 89241199
UD: 8912
AU: Wolf,-Frederick-A. (Frederick Adolph), 1885-
TI: Citrus canker.
ST: Bulletin / Agricultural Experiment Station of the Alabama Polytechnic Institute ; no. 190.
SO: Auburn, Ala. : Agricultural Experiment Station of The Alabama Polytechnic Institute, 1916. p. 92-100, [2] p. of plates : ill.
CN: DNAL 100-AL1s-1-no.190
PA: Experiment-Station-State-Agriculture
PY: 1916
LA: English
CP: Alabama; USA
NT: Cover title.
Includes bibliographical references.
PT: Monograph; Bibliography
SF: UIU
DE: Citrus-canker.
CC: F832

Record 91 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 89238057
UD: 8909
AU: Edgerton,-C.-W. (Claude Wilbur), 1880-
TI: Citrus canker.
ST: Louisiana bulletin ; no. 150.
SO: Baton Rouge, La. : Agricultural Experiment Station of the Louisiana State University and A. & M. College, 1914. 10 p. : ill.
CN: DNAL 100-L93-1-no.150
PA: Experiment-Station-State-Agriculture
PY: 1914
LA: English
CP: Louisiana; USA
NT: Cover title.
PT: Monograph
SF: UIU
DE: Citrus-canker.
CC: F831

Record 92 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 89032835
UD: 8908
TI: Citrus canker action.
SO: Calif-Grow. Fallbrook, Calif. : Rancher Publications. Feb 1989. v. 13 (2) p. 14. ill.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1989
LA: English
IS: ISSN: 0888-1715

PT: Article

DE: citrus-. cankers-. xanthomonas-citri. disease-distribution. orchards-. inspection-. epidemics-. florida-. california-.

CC: F832

Record 93 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 89026273

UD: 8907

AU: Kubicek,-Q.B.; Civerolo,-E.L.; Bonde,-M.R.; Hartung,-J.S.; Peterson,-G.L.

TI: Isozyme analysis of *Xanthomonas campestris* pv. citri.

SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Mar 1989. v. 79 (3) p. 297-300.

CN: DNAL 464.8-P56

PA: Other-US

PY: 1989

LA: English

CO: PHYTAJ

IS: ISSN: 0031-949X

NT: Includes references.

PT: Article

DE: xanthomonas-citri. xanthomonas-campestris. strains-. isoenzymes-. enzyme-polymorphism. electrophoresis-. characterization-. virulence-. pathogenicity-. provenance-. cell-culture.

CC: F832

AB: Isozyme analysis of 14 putative isozymic loci by horizontal starch gel electrophoresis was conducted on 36 strains of *Xanthomonas campestris* pv. citri representing four pathogenic variants associated with different forms of citrus bacterial canker disease in eight countries. An additional 80 strains of *X. campestris* associated with citrus bacterial spot disease, primarily in Florida citrus nurseries, also were analyzed. Four enzymes were monomorphic in all 116 strains. The number of isomorphs for the 10 remaining polymorphic loci ranged from two to five. Generally, all strains of *X. c. citri* were isozymically similar, but not identical in all cases, to the neopathotype strain. No isozymes were found in the citrus canker groups of strains that distinguished any of the forms of citrus canker. As a subgroup, the Asiatic citrus canker strains exhibited relatively little isozymic polymorphism despite their varied origins worldwide. In contrast, several isozymic alleles were present only in the set of citrus bacterial spot strains isolated from Florida citrus nurseries. These strains also exhibited extensive isozymic polymorphism. Isozyme analysis may be a useful technique in epidemiological studies of phytopathogenic bacteria.

Record 94 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 88050016

UD: 8812

AU: Webb,-P.G.; Biggs,-R.H.; Gander,-J.E.

TI: Citrus canker--the role of enzymes and xanthan gum in infection and spread of the pathogen.

SO: Proc-Annu-Meet-Fla-State-Hortic-Soc. [S.l.] : The Society. Aug 1988. v. 100 p. 77-78.

CN: DNAL SB319.2.F6F56

PA: Other-US

PY: 1988

LA: English

IS: ISSN: 0886-7283

NT: Includes references.

PT: Article

DE: poncirus-trifoliata. hybrids-. citrus-paradisi. infection-. xanthomonas-campestris. disease-distribution. disease-resistance. enzymes-. interactions-. xanthan-. host-parasite-relationships.

CC: F832

Record 95 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 88033163

UD: 8810
AU: Gottwald,-T.R.; McGuire,-R.G.; Garran,-S.
TI: Asiatic citrus canker: spatial and temporal spread in simulated new planting situations in Argentina.
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. June 1988. v. 78 (6) p. 739-745.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1988
LA: English
CO: PHYTAJ
IS: ISSN: 0031-949X
NT: Includes references.
PT: Article
DE: citrus-paradisi. citrus-sinensis. xanthomonas-campestris. disease-models. disease-transmission.
disease-distribution. argentina-.
CC: F832

Record 96 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 88225466
UD: 8809
AU: Stevens,-H.-E. (Harold Edwin), 1880-
TI: Citrus cankers, III.
ST: Bulletin / University of Florida. Agricultural Experiment Station ; no. 128.
SO: Gainesville, Fla. : University of Florida Agricultural Experiment Station, 1915. 20 p. : ill., map
CN: DNAL 100-F66S-1-no.128
PA: Experiment-Station-State-Agriculture
PY: 1915
LA: English
CP: Florida; USA
NT: Cover title.
Includes bibliographical references.
PT: Monograph; Bibliography
SF: UIU
DE: Citrus-canker. Citrus-fruits-Diseases-and-pests.
CC: F832

Record 97 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 88225462
UD: 8809
AU: Berger,-E.-W. (Edward William), 1869-; Stevens,-H.-E. (Harold Edwin), 1880-; Stirling,-Frank.
TI: Citrus canker, II.
ST: Bulletin / University of Florida. Agricultural Experiment Station ; no. 124.
SO: Gainesville, Fla. : University of Florida Agricultural Experiment Station, 1914. p. [25]-53 : ill.
CN: DNAL 100-F66S-1-no.124
PA: Experiment-Station-State-Agriculture
PY: 1914
LA: English
CP: Florida; USA
NT: Cover title.
CT: History of citrus canker / by E.W. Berger -- Studies of citrus canker / by H.E. Stevens -- / Eradication of citrus canker / by Frank Sterling.
PT: Monograph
SF: UIU
DE: Citrus-canker-Florida. Citrus-fruits-Diseases-and-pests-Florida.
CC: F831

Record 98 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 88225460
UD: 8809
AU: Stevens,-H.-E. (Harold Edwin), 1880-
TI: Citrus canker : a preliminary report.
ST: Bulletin / University of Florida. Agricultural Experiment Station ; no. 122.
SO: Gainesville, Fla. : University of Florida Agricultural Experiment Station, 1914. p. [111]-118 : ill.
CN: DNAL 100-F66S-1-no.122
PA: Experiment-Station-State-Agriculture
PY: 1914
LA: English
CP: Florida; USA
NT: Cover title.
PT: Monograph
SF: UIU
DE: Citrus-canker-Florida. Citrus-fruits-Diseases-and-pests-Florida.
CC: F831

Record 99 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 88019202
UD: 8808
AU: Kishun,-R.; Chand,-R.
TI: Studies on germplasm resistance and chemical control of citrus canker.
SO: Indian-J-Hortic. Bangalore : K. L. Chadha. Mar/June 1987. v. 44 (1/2) p. 126-132.
CN: DNAL 80-IN2
PA: Foreign
PY: 1987
LA: English
CO: IJHOA
IS: ISSN: 0019-5251
NT: Includes references.
PT: Article
DE: citrus-aurantifolia. cankers-. xanthomonas-campestris. chemical-control. disease-resistance. germplasm-. rootstocks-.
CC: F832; F200

Record 100 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 88009104
UD: 8807
AU: Barnes,-E.A.-III
TI: Citrus canker a major headache for Cal Poly Pomona's Project in the Yemen Arab Republic.
SO: Calif-Grow. Fallbrook, Calif. : Rancher Publications. Apr 1988. v. 12 (4) p. 12-13, 38-39, 41.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1988
LA: English
IS: ISSN: 0193-399X
PT: Article
DE: citrus-. xanthomonas-campestris. disease-control. international-cooperation. extension-activities. yemen-arab-republic. california-.
CC: F832; C210

Record 101 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 88009103
UD: 8807
AU: Palmer,-T.
TI: Citrus canker and California.
SO: Calif-Grow. Fallbrook, Calif. : Rancher Publications. Apr 1988. v. 12 (4) p. 10-11, 42-43. ill.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1988
LA: English
IS: ISSN: 0193-399X
PT: Article
DE: citrus-. xanthomonas-campestris. geographical-distribution. virulence-. quarantine-. legislations-. california-.
CC: F832

Record 102 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87092349
UD: 8804
AU: Muraro,-R.P.
TI: Observations of Argentina's citrus industry and citrus canker control program with estimations of additional costs to Florida citrus growers under a Florida citrus canker control program.
SO: Staff-Pap-Univ-Fla-Food-Resour-Econ-Dep-Inst-Food-Agric-Sci. Gainesville, Fla. : The Department. Jan 1986. (289) 46 p. maps.
CN: DNAL HD1751.A1S73
PA: Other-US
PY: 1986
LA: English
NT: Includes statistical data.
Includes references.
PT: Article
DE: citrus-. xanthomonas-citri. cost-benefit-analysis. plant-disease-control. florida-. argentina-.
CC: F832; E200

Record 103 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87083198
UD: 8802
AU: Stall,-R.E.; Civerolo,-E.L.; Ducharme,-E.P.; Krass,-C.J.; Poe,-S.R.; Miller,-J.W.; Schoulties,-C.L.
TI: Management of citrus canker by eradication of *Xanthomonas campestris* pv. *citri*.
SO: Curr-Plant-Sci-Biotechnol-Agric. Dordrecht : Martinus Nijhoff Publishers. 1987. v. 4 p. 900-905.
CN: DNAL S494.5.B563C87
PA: Foreign
PY: 1987
LA: English
NT: Presented at the "Sixth International Conference on Plant Pathogenic Bacteria," June 2-7, 1985, College Park, Maryland.
Includes references.
PT: Article
DE: citrus-. xanthomonas-campestris. cankers-. plant-disease-control. florida-.
CC: F832

Record 104 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 87056774

UD: 8710
AU: Schoulties,-C.L.; Civerolo,-E.L.; Miller,-J.W.; Stall,-R.E.; Krass,-C.J.; Poe,-S.R.; DuCharme,-E.P.
TI: Citrus canker in Florida.
SO: Plant-Dis. St. Paul, Minn. : American Phytopathological Society. May 1987. v. 71 (5) p. 388-395. ill., maps.
CN: DNAL 1.9-P69P
PA: Other-US
PY: 1987
LA: English
CO: PLDRA
IS: ISSN: 0191-2917
NT: Includes references.
PT: Article
DE: citrus-. xanthomonas-campestris. incidence-. disease-control. disease-distribution. symptoms-.
hosts-of-plant-diseases. florida-.
CC: F832

Record 105 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87033400
UD: 8707
AU: Webb,-P.G.; Biggs,-R.H.; Gander,-J.E.; Meadows,-M.E.
TI: In vivo enhancement of citrus canker symptomatology by xanthan gum interaction.
SO: Proc-Ann-Meet-Fla-State-Hortic-Soc. [s.l.] : The Society. 1986 (pub. 1987). v. 99 p. 211-213.
CN: DNAL SB319.2.F6F56
PA: Other-US
PY: 1986
LA: English
IS: ISSN: 0886-7283
NT: Includes references.
PT: Article
DE: bacterial-diseases. citrus-. xanthomonas-campestris. symptoms-. xanthan-. gums-. interactions-.
CC: F832

Record 106 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87020712
UD: 8706
AU: Agostini,-J.P.; Graham,-J.H.; Timmer,-L.W.
TI: Relationship between development of citrus canker and rootstock cultivar for young 'Valencia' orange trees in Misiones, Argentina.
SO: Proc-Ann-Meet-Fla-State-Hortic-Soc. [s.l.] : The Society. 1986. v. 98 p. 19-22.
CN: DNAL SB319.2.F6F56
PA: Other-US
PY: 1986
LA: English
IS: ISSN: 0886-7283
NT: Includes references.
PT: Article
DE: citrus-sinensis. cankers-. xanthomonas-campestris. disease-control. rootstocks-. varieties-. argentina-.
CC: F832

Record 107 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87020711
UD: 8706
AU: Edwards,-G.J.; Balzquez,-C.H.; Miller,-J.

TI: Preliminary experiments with remote sensing to detect citrus canker.
SO: Proc-Ann-Meet-Fla-State-Hortic-Soc. [s.l.] : The Society. 1986. v. 98 p. 16-18. ill.
CN: DNAL SB319.2.F6F56
PA: Other-US
PY: 1986
LA: English
IS: ISSN: 0886-7283
NT: Includes references.
PT: Article
DE: citrus-paradisi. cankers-. xanthomonas-campestris. detection-. remote-sensing. color-. infrared-photography.
CC: F832

Record 108 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 87006878
UD: 8703
AU: Muraro,-R.P.
TI: A review of Argentina's citrus canker control program with cost estimates for a similar program in Florida.
SO: Bull-Fla-Coop-Ext-Serv-Univ-Fla. Gainesville, Fla : The Service. Apr 1986. (234) 38 p. maps.
CN: DNAL 275.29-F66
PA: Extension-Service-State-Agriculture
PY: 1986
LA: English
NT: Includes references.
PT: Article
DE: citrus-fruits. cost-analysis. disease-control. argentina-. florida-.
CC: F832

Record 109 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 86069168
UD: 8611
AU: Kender,-W.J.
TI: Citrus canker: impacts of research on eradication and control.
SO: Trans-Citrus-Eng-Conf. Lakeland : American Society of Mechanical Engineers. 1986. v. 32 p. 42-48.
CN: DNAL 389.9-C49
PA: Other-US
PY: 1986
LA: English
PT: Article
DE: citrus-fruits. bacterial-diseases. xanthomonas-campestris. control-.
CC: F832

Record 110 of 298 - AGRICOLA (1984 - 12/91)

AN: CAT 86865981
UD: 8611
CA: United States. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry.
TI: Citrus canker : hearing before the Committee on Agriculture, Nutrition, and Forestry, United States Senate, Ninety-eighth Congress, second session, October 1, 1984, Orlando, FL.
ST: United States. Congress (98th, 2nd session : 1984). Senate. S. hrg. ; 98-1167.
SO: Washington, [D.C.] : U.S. G.P.O., 1985. iii, 69 p.
CN: DNAL KF26.A35-1984e
PA: Other-US
PY: 1985
LA: English

CP: District-of-Columbia; USA
NT: Distributed to some depository libraries in microfiche.
Item 1032-C, 1032-D (microfiche).
PT: Monograph
DE: Citrus-canker-Florida. Xanthomonas-campestris-Control-Florida. Citrus-fruit-industry-Florida.
CC: F832

Record 111 of 298 - AGRICOLA (1984 - 12/91)

AN: AGE 86929133
UD: 8609
AU: Muraro,-R.P.
TI: Observations of Argentina's citrus industry and citrus canker control program with estimations of additional costs to Florida citrus growers under a Florida citrus canker control program.
SO: Staff-Pap-Univ-Fla-Food-Resour-Econ-Dep-Inst-Food-Agric-Sci. Gainesville, Fla. : The Department. Jan 1986. (289) 46 p. ill.
CN: DNAL HD1751.A1S73
PA: Other-US
PY: 1986
LA: English
NT: Includes statistical data.
Includes 20 references.
PT: Article
SF: AGE
DE: citrus-. cankers-. herbicides-. crop-production. spraying-. costs-. argentina-. florida-.
CC: F832; H000

Record 112 of 298 - AGRICOLA (1984 - 12/91)

AN: AGE 86927032
UD: 8605
AU: Rivers,-M.; Glaser,-L.
TI: USDA actions.
SO: Natl-Food-Rev-NFR-U-S-Dept-Agric-Econ-Res-Serv. Washington, D.C. : The Service. Fall 1985. (31) p. 30.
CN: DNAL-AGE aHD9001.N275
PA: USDA
PY: 1985
LA: English
IS: ISSN: 0164-3428
PT: Article
SF: AGE
DE: usda-. slaughter-. regulation-. standards-. lecithins-. imports-. animals-.
ID: food-and-nutrition. trichina-. citrus-canker.
CC: E710; D100
AB: Extract: USDA regularly implements operational and regulatory changes that affect the status of food and nutrition in the United States. Presented are some of the recent actions.

Record 113 of 298 - AGRICOLA (1984 - 12/91)

AN: GUA 85069920
UD: 8511
TI: Citrus canker--It affects more than Florida.
SO: Am-Fruit-Grower. Willoughby, Ohio : Meister Publishing Company. Nov 1984. v. 104 (11) p. 13.
CN: DNAL 80-G85
PA: Other-US
PY: 1984

LA: English
IS: ISSN: 0002-8568
PT: Article
DE: citrus-fruits. cankers-. factors-of-production. usa-. florida-.
CC: F832

Record 114 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 85060114
UD: 8510
TI: Citrus canker: Hearings produce strong disagreement on APHIS proposals.
SO: Citrograph. Los Angeles, Calif. : California Citrograph Pub. Co. Aug 1985. v. 70 (10) p. 225-226.
CN: DNAL 80-C125
PA: Other-US
PY: 1985
LA: English
IS: ISSN: 0009-7578
PT: Article
DE: xanthomonas-citri. fruit-. certification-. quality-controls. disease-control. florida-. usa-.
ID: usda-. animal-and-plant-health-inspection-service.
CC: F832; D500

Record 115 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 85056210
UD: 8510
TI: Canker control: a proposal to ship to other citrus states.
SO: Citrograph. Los Angeles, Calif. : California Citrograph Pub. Co. July 1985. v. 70 (9) p. 208.
CN: DNAL 80-C125
PA: Other-US
PY: 1985
LA: English
IS: ISSN: 0009-7578
PT: Article
DE: citrus-. growers-. cankers-. plant-disease-control. quarantine-. commercial-law. california-. texas-. florida-.
ID: citrus-canker-technical-advisory-committee.
CC: F832; D500

Record 116 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 85052317
UD: 8509
AU: Whitmore,-S.
TI: Citrus canker diseases.
SO: Spec-Pub-Ser-Natl-Agric-Libr-U-S. Beltsville, Md. : The Library. June 1985. (85-01) 16 p. ill.
CN: DNAL aS21.D27S64
PA: USDA
PY: 1985
LA: English
NT: Bibliography.
PT: Article
DE: xanthomonas-campestris. citrus-. cankers-. usa-.
CC: F832

Record 117 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 85046549
UD: 8508
AU: Rossetti,-V.; Feichtenberger,-E.; Silveira,-M.L.
TI: Citrus canker (*Xanthomonas campestris* pv. *citri*): an analytical bibliography.
SO: Proceedings of the International Society of Citriculture / [International Citrus Congress, November 9-12, 1981, Tokyo, Japan ; K. Matsumoto, editor]. Shimizu, Japan : International Society of Citriculture, 1982-1983. p. 418-419.
CN: DNAL SB369.I5-1981
PA: Foreign
PY: 1982
LA: English
PT: Article
DE: xanthomonas-campestris. citrus-. bibliographies-.
ID: xanthomonas-campestris-citri.
CC: F832

Record 118 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 85025963
UD: 8506
AU: Lopez,-M.M.; Navarro,-L.
TI: A new in vitro inoculation method for citrus canker diagnosis.
SO: Proceedings of the International Society of Citriculture / [International Citrus Congress, November 9-12, 1981, Tokyo, Japan ; K. Matsumoto, editor]. Shimizu, Japan : International Society of Citriculture, 1982-1983. p. 399-402. ill.
CN: DNAL SB369.I5-1981
PA: Foreign
PY: 1982
LA: English
NT: Includes 12 references.
PT: Article
DE: xanthomonas-campestris. pseudomonas-syringae. citrus-paradisi. citrus-sinensis. tissue-culture. inoculation-.
ID: xanthomonas-campestris-citri.
CC: F832

Record 119 of 298 - AGRICOLA (1984 - 12/91)

AN: ADL 85025962
UD: 8506
AU: Serizawa,-S.
TI: Recent studies on the behavior of the causal bacterium of the citrus canker.
SO: Proceedings of the International Society of Citriculture / [International Citrus Congress, November 9-12, 1981, Tokyo, Japan ; K. Matsumoto, editor]. Shimizu, Japan : International Society of Citriculture, 1982-1983. p. 395-397.
CN: DNAL SB369.I5-1981
PA: Foreign
PY: 1982
LA: English
NT: Includes 28 references.
PT: Article
DE: xanthomonas-campestris. citrus-. disease-transmission. wind-speed. wind-effects. wind-damage. rain-.
ID: xanthomonas-campestris-citri.
CC: F832

Record 120 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 85003401
UD: 8501
AU: Sun,-M.
TI: The mystery of Florida's citrus canker.
SO: Science. Washington, D.C. : American Association for the Advancement of Science. Oct 19, 1984. v. 226 (4672) p. 322-323. ill.
CN: DNAL 470-SCI2
PA: Other-US
PY: 1984
LA: English
CO: SCIEA
IS: ISSN: 0036-8075
PT: Article
DE: xanthomonas-campestris. citrus-fruits. seedlings-. cankers-. florida-.
CC: F832

Record 121 of 298 - AGRICOLA (1984 - 12/91)

AN: GUA 85001770
UD: 8501
AU: Robison,-L.
TI: California's battle with citrus canker [*Xanthomonas campestris citri*].
SO: Citrograph. Los Angeles, Calif. : California Citrograph Pub. Co. Nov 1984. v. 70 (1) p. 7-8.
CN: DNAL 80-C125
PA: Other-US
PY: 1984
LA: English
IS: ISSN: 0009-7578
PT: Article
DE: xanthomonas-campestris. cankers-. import-controls. regulations-. california-.
CC: F832; D500

Record 122 of 298 - AGRICOLA (1984 - 12/91)

AN: GUA 85001769
UD: 8501
TI: Basic facts on the cause and control of citrus canker [USDA Animal and Plant Health Inspection Service, *Xanthomonas campestris citri*].
SO: Citrograph. Los Angeles, Calif. : California Citrograph Pub. Co. Nov 1984. v. 70 (1) p. 8-9, 21.
CN: DNAL 80-C125
PA: Other-US
PY: 1984
LA: English
IS: ISSN: 0009-7578
PT: Article
DE: xanthomonas-campestris. cankers-. citrus-fruits. plant-protection. usa-. florida-.
CC: F832

Record 123 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84099835
UD: 8411
AU: Currier,-W.
TI: Wider implications seen in citrus canker case [U.S. quarantine regulations, Mexican limes].
SO: Avocado-Grow. Vista, Calif. : Rancher Pub. Mar 1983. v. 7 (3) p. 48-50.
CN: DNAL SB379.A9A9

PA: Other-US
PY: 1983
LA: English
IS: ISSN: 0193-399X
PT: Article
DE: USA-. Mexico-.
CC: D500; F832

Record 124 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84099832
UD: 8411
AU: Currier,-W.
TI: Mexican citrus canker: options and implications.
SO: Avocado-Grow. Vista, Calif. : Rancher Pub. Feb 1983. v. 7 (2) p. 48-50.
CN: DNAL SB379.A9A9
PA: Other-US
PY: 1983
LA: English
IS: ISSN: 0193-399X
PT: Article
DE: Mexico-.
CC: F832

Record 125 of 298 - AGRICOLA (1984 - 12/91)

AN: GUA 84127055
UD: 8411
AU: Danos,-E.; Berger,-R.D.; Stall,-R.E.
TI: Temporal and spatial spread of citrus canker within groves [*Xanthomonas campestris* pv. *citri*, Argentina].
SO: Phytopathology. St. Paul, Minn. : American Phytopathological Society. Aug 1984. v. 74 (8) p. 904-908. ill.
CN: DNAL 464.8-P56
PA: Other-US
PY: 1984
LA: English
CO: PHYTAJ
IS: ISSN: 0031-949X
NT: Includes 16 references.
PT: Article
DE: Argentina-.
CC: F832

Record 126 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84096774
UD: 8410
AU: Serizawa,-S.; Inoue,-K.
TI: Studies on citrus canker disease, caused by *Xanthomonas campestris* pv. *citri* (Hasse 1915) Dye 1978. VIII. Examining the percentage of diseased leaves and the severity of lesions as a standard for forecasting its occurrence [in Japan].
SO: Shizuoka-Kankitsu-Shikenjo-Kenkyu-Hokoku-Bull-Shizuoka-Prefect-Citrus-Exp-Stn. Shimizu-shi : Shizuoka Kankitsu Shikenjo. Apr 1983. (19) p. 51-58. ill.
CN: DNAL 93.33-SH62B
PA: Foreign
PY: 1983
LA: Japanese; Summary in: English

IS: ISSN: 0488-6828
NT: Includes references.
PT: Article
DE: Japan-.
CC: F832

Record 127 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84091217
UD: 8409
AU: Takahashi,-T.; Doke,-N.
TI: Agglutination of *Xanthomonas campestris* pv. *citri*, a causal pathogen of citrus canker, by proteinaceous components from citrus leaves [*Citrus unshiu*, *Citrus reticulata*, Mandarin oranges, *Citrus natsudaoidai*].
SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo : The Society. Dec 1983. v.49 (5) p. 600-609. ill.
CN: DNAL 464.9-P562
PA: Foreign
PY: 1983
LA: English; Summary in: Japanese
CO: NSBGA
IS: ISSN: 0031-9473
NT: Includes references.
PT: Article
CC: F832

Record 128 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84042811
UD: 8405
AU: Falico-de-Alcaraz,-G.;
TI: Control of citrus canker (*Xanthomonas citri* Hasse Dow) in grapefruit (*Citrus paradisi* Macfayen). Control de la canchrosis de los citricos (*Xanthomonas citri* Hasse Dow) en pomelo (*Citrus paradisi* Macfayen).
OT: Control de la canchrosis de los citricos (*Xanthomonas citri* Hasse Dow) en pomelo (*Citrus paradisi* Macfayen).
SO: Fitopatologia.. Lima, Peru : Asociacion Latinoamericana de Fitopatologia. May 1982. v. 17 (1) p. 48-53.
CN: DNAL SB599.F5
PA: Foreign
PY: 1982
LA: Spanish; Summary in: English
CO: FTPGA
IS: ISSN: 0430-6155
NT: Includes references.
PT: Article
CC: F832

Record 129 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84032048
UD: 8404
AU: Ota,-T.
TI: Interactions in vitro and in vivo between *Xanthomonas campestris* pv. *citri* and antagonistic *Pseudomonas* sp. [*Citrus* canker].
SO: Nihon-Shokubutsu-Byori-Gakkaiho-Ann-Phytopathol-Soc-Jap. Tokyo : The Society. July 1983. v. 49 (3) p. 308-315.
CN: DNAL 464.9-P562
PA: Foreign
PY: 1983

LA: Japanese; Summary in: English
CO: NSBGA
IS: ISSN: 0031-9473
NT: Includes references.
PT: Article
CC: F832

Record 130 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84012712
UD: 8402
AU: Krishna,-A.; Nema,-A.G.
TI: Evaluation of chemicals for the control of citrus canker [caused by *Xanthomonas compestris* pv. citri].
SO: Indian-Phytopathol. New Delhi : Indian Phytopathological Society. June 1983. v. 36 (2) p. 348-350.
CN: DNAL 464.8-IN2
PA: Foreign
PY: 1983
LA: English
CO: IPHYA
IS: ISSN: 0367-973X
NT: Includes references.
PT: Article
CC: F832

Record 131 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 84000361
UD: 8401
AU: Kanur,-S.P.; Cheema,-S.S.; Kapur,-S.
TI: Field screening of citrus germplasm against citrus canker caused by *Xanthomonas citri* (Hasse) Dowson.
SO: Indian-J-Hortic. Bangalore : K. L. Chadha. Sept/Dec 1981. v. 38 (3/4) p. 265-267.
CN: DNAL 80-IN2
PA: Foreign
PY: 1981
LA: English
CO: IJHOA
IS: ISSN: 0019-5251
NT: Includes references.
PT: Article
CC: F832

Record 132 of 298 - AGRICOLA (1984 - 12/91)

AN: IND 83128172
UD: 8401
AU: Chand,-J.N.; Pal,-V.
TI: Citrus canker in India and its management [*Xanthomonas citri*].
SO: Problems of citrus diseases in India / edited by S.P. Raychaudhuri, Y.S. Ahlawat. New Delhi : Surabhi Printers and Publishers, c1982. p. 21-36.
CN: DNAL SB608.C5P7
PA: Foreign
PY: 1982
LA: English
NT: Literature review.
Includes references.
PT: Article

CC: F832

Record 133 of 298 - CABPESTCD 1973-1988

TI: Studies on germplasm resistance and chemical control of citrus canker.

AU: Ram-Kishun; Ramesh-Chand

AD: Div. Pl. Pathol., Indian Inst. Hort. Res., Bangalore 560 080, India.

SO: Indian-Journal-of-Horticulture. 1987, 44: 1-2, 126-132; 12 ref.

PY: 1987

LA: English

AB: Resistance to *Xanthomonas campestris* pv. *citri* in 28 lime (mainly *Citrus aurantifolia*) clones budded on 16 citrus rootstocks was measured by counting infected leaves in field trials at Bangalore in 1983-85. *C. latifolia* was free of infection, while rootstock Karna (lime) was resistant (less than 5% infection). Moderate resistance (6-20% infection) was recorded for 9 rootstocks but all other clones and rootstocks were susceptible or highly susceptible. Four sprays of Blitox (50% oxychloride) or Bordeaux mixture along with 2 prunings were found effective in reducing disease and increasing yield. Average disease reduction was 68.3 and 65.2% and the increase in number of fruits was 94.0 and 84.8% and weight of fruits was 86.4 and 78.8%, respectively, for the 2 treatments.

DE: Limes-; rootstocks-; control-; copper-oxychloride; Bordeaux-mixture; rootstock-scion-relationships; diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-*citri*; *Citrus-aurantifolia*; *Citrus-latifolia*; *Citrus*-; *Xanthomonas*-; bacteria-
ID: Oxychloride

RN: 1332-40-7; 8011-63-0

BT: copper-fungicides; fungicides; pesticides; bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Citrus*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants

CC: FF020; FF600; HH600; HH000

CD: Plant-Breeding-and-Genetics; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants;

Host-Resistance-and-Immunity; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

IS: 0019-5251

UD: 951216

AN: 881601757

Record 134 of 298 - CABPESTCD 1973-1988

TI: Epidemiology of a citrus leaf-spot disease in Colima, Mexico.

AU: Stapleton-JJ; Garza-Lopez-JG

AD: Dep. Pl. Path., Univ. California, Davis, CA 95616, USA.

SO: Phytopathology. 1988, 78: 4, 440-443; 28 ref.

PY: 1988

LA: English

AB: A leaf- and twig-spot disease (LSD) known as bacteriosis is a suspected form of citrus canker (*Xanthomonas campestris* pv. *citri*) occurring primarily on Mexican lime (ML) trees (*Citrus aurantifolia*) along the central-Pacific coast of Mexico. Seasonal incidence and severity of presumptive LSD symptoms in 2 groves increased during the dry, cool months (Nov.-May) and decreased during the warm, rainy season (Jun.-Oct.). Presumptive LSD symptoms were observed on all 15 citrus cultivars that were evaluated for natural infection in the field. Observed host susceptibility rankings showed *C. limettioides*, *C. aurantifolia*, *C. macrophylla* and *C. latifolia* to be most susceptible to LSD, and *C. sinensis* cv. Valencia, *C. taiwanica* and *C. reticulata* to be least susceptible. *C. sinensis* cv. Washington navel, *C. grandis*, *C. aurantium* and *C. paradisi* were intermediate. Presumptive LSD symptoms could not be confirmed on varieties of *Poncirus trifoliata*. Natural symptom incidence of LSD on non-ML hosts decreased with increasing distance from ML blocks. No definitive *X. c. pv. citri* isolates were recovered during the course of these experiments and epidemiological and aetiological factors of LSD are unlike those of known forms of citrus canker.

DE: epidemiology-; Limes-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Citrus*-; bacteria-

GE: Mexico-

ID: leaf-spot

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
North-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-949X
UD: 951216
AN: 881114004

Record 135 of 298 - CABPESTCD 1973-1988

TI: Effect of adjuvants on the control of citrus canker.
OT: [Xanthomonas campestris pv. citri].
AU: Sadamatsu-N; Mikuriya-H; Tashiro-N
AD: Saga Fruit Tree Exp. Sta., Oki-gun, Saga 845, Japan.
SO: Proceedings-of-the-Association-for-Plant-Protection-of-Kyushu. 1987, 33: 76-78.
PY: 1987
LA: Japanese
DE: control-; diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0385-6410
UD: 951216
AN: 881113145

Record 136 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker disease. IX. Seasonal changes in disease development and correct timing of bactericidal applications.
AU: Serizawa-S; Inoue-K; Suzuki-M
AD: Shizuoka Prefectural Citrus Exp. Sta., Shimizu-Shi, Shizuoka-ken, Japan.
SO: Bulletin-of-the-Shizuoka-Prefectural-Citrus-Experiment-Station. 1985, No.21, 35-43; 1 pl.; 6 ref.
PY: 1985
LA: Japanese
LS: English
AB: A study of the development of citrus canker (*Xanthomonas campestris* pv. *citri*) on the leaves and fruits of *Kawano natsudaikai* (*Citrus natsudaikai*) showed that bactericides were most effective when applied in May as soon as the new leaves appeared and again in the autumn before the typhoon season.
DE: Natsudaikais-; diseases-; control-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Xanthomonas-campestris-pv.-citri; Citrus-natsudaikai; bacteria-
GE: Japan-
BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia; Asia
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0488-6828
UD: 951216
AN: 880351604

Record 137 of 298 - CABPESTCD 1973-1988

TI: Integrated control of citrus canker - effect of genetic resistance and application of bactericides.
 OT: Controle integrado de cancro citrico - efeito da resistencia genetica e da aplicacao de bactericidas.
 AU: Leite-Junior-RP; Mohan-SK; Pereira-ALG; Campacci-CA
 AD: Inst. Agron. Parana, 86100 Londrina, PR, Brazil.
 SO: Fitopatologia-Brasileira. 1987, 12: 3, 257-263; 19 ref.
 PY: 1987
 LA: Portuguese
 LS: English
 AB: Copper based bactericides were effective in reducing the development of canker caused by *Xanthomonas campestris* pv. *citri*, while streptomycin sulphate did not show consistent results. On highly susceptible cultivars, bactericides alone did not provide adequate control. Copper based bactericides were most effective on moderately resistant cultivars, incidence being reduced by up to 90% as compared with unsprayed plants. Highly resistant cultivars such as Ponkan tangerine did not require any control measures.
 DE: control-; varietal-reactions; Copper-; diseases-; cultivars-; Mandarins-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
 OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
 GE: Brazil-
 RN: 7440-50-8
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America
 CC: FF600; HH000
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
 PT: Journal-article
 IS: 0100-4158
 UD: 951216
 AN: 881157261

Record 138 of 298 - CABPESTCD 1973-1988

TI: Clonal population structure of *Xanthomonas campestris* and genetic diversity among citrus canker strains.
 AU: Gabriel-DW; Hunter-JE; Kingsley-MT; Miller-JW; Lazo-GR
 AD: Pl. Path. Dep., Univ. Florida, Gainesville, FL 32611, USA.
 SO: Molecular-Plant-Microbe-Interactions. 1988, 1: 2, 59-65; 26 ref.
 PY: 1988
 LA: English
 AB: Restriction fragment length polymorphism (RFLP) analyses of *X. c. pv. citri* strs. revealed 3 clonal groups. One of the clonal groups corresponded to the previously described *X. c. pv. citri* "A" strs; another included the previously described "B," "C" and "Mexican bacteriosis" strs. The 3rd group consisted of strs recently discovered in Florida citrus nurseries. These showed moderate polymorphism between strs of the group, a characteristic of strs included in pathovars with a wide host range. Furthermore, strs of this new group appeared to be related to *X. c. pv. alfalfae* by RFLP analyses, and strs of 1 subclone of the group had a host range similar to that of *X. c. pv. alfalfae* in limited pathogenicity tests. It is proposed that: (1) diverse *X. campestris* strs may have been selected on citrus because they independently carried genes with selective value on these hosts; (2) related strs may have different combinations of virulence factors conditioning host range specificity; and (3) RFLP analyses are a generally useful method to indicate wide vs. narrow host range specificity of pathogenic populations without pathogenicity tests.
 DE: strains-; host-specificity; population-structure; Biotechnology-; Taxonomy-; pathogenicity-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
 OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes
 CC: FF600; WW000; ZZ380
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biotechnology; Taxonomy-and-Evolution
 PT: Journal-article
 IS: 0894-0282
 UD: 951216

AN: 881110017

Record 139 of 298 - CABPESTCD 1973-1988

TI: Antagonism between *Aspergillus* spp. and *Xanthomonas campestris* pv. *citri* (Hasse) Dye, incitant of citrus canker.

AU: Masroor-MK; Sudhir-Chandra

AD: Dep. Bot., Univ. Allahabad, Allahabad-211 002, India.

SO: National-Academy-of-Sciences,-India,-Science-Letters. 1987, 10: 7, 233-236; 7 ref.

PY: 1987

LA: English

AB: Qualitative and quantitative analysis of the mycoflora of soils of citrus orchards was made to identify antagonists effective against this pathogen. Of 27 fungal isolates tested, the highest activity was shown by *A. flavus*, *A. clavatus* and *A. niger*.

DE: antagonists-; antagonism-; hosts-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas campestris*-pv.-*citri*; *Aspergillus flavus*; *Aspergillus niger*; *Aspergillus*-; bacteria-; *Aspergillus-Clavatus*

GE: India-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; *Aspergillus*; Deuteromycotina; Eumycota; fungi; South-Asia; Asia

CC: FF600; HH100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control

PT: Journal-article

UD: 951216

AN: 881109352

Record 140 of 298 - CABPESTCD 1973-1988

TI: Citrus canker (*Xanthomonas campestris* pv. *citri*) and banana leaf rust (*Uredo musae*) at Christmas Island, Indian Ocean.

AU: Shivas-RG

AD: Pl. Path. Branch, Dep. Agric., South Perth, WA 6151, Australia.

SO: Australasian-Plant-Pathology. 1987, 16: 2, 38-39; 7 ref.

PY: 1987

LA: English

AB: *X. campestris* pv. *citri* was detected on 5 West Indian lime trees but eradication of the disease from the island was not considered feasible. *U. musae* was widespread on cultivated and wild bananas and is a new record of *U. musae* on Australian territory.

DE: Limes-; Bananas-; Records-; geography-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas campestris*-pv.-*citri*; Citrus-; bacteria-; Musa-

GE: Christmas-Island

ID: *Uredo musae*

BT: bacteria; prokaryotes; *Xanthomonas campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Musaceae; Zingiberales; monocotyledons; Indian-Ocean-Islands; Australian-Oceania; Oceania

CC: FF600; ZZ800

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Earth-Sciences-General

PT: Journal-article

IS: 0815-3191

UD: 951216

AN: 881343624

Record 141 of 298 - CABPESTCD 1973-1988

TI: New pests recorded.

SO: Arab-and-Near-East-Plant-Protection-Newsletter. 1986, No. 3, 17-18, 5-6.

PY: 1986

LA: English, Arabic

AB: New insect pests and disease records for various crops are given and include insect pests on *Prunus* spp., *Pinus* sp. and *Cedrus libani* in Lebanon, citrus canker (caused by *Xanthomonas* [campestris pv.] citri) in Oman and bacterial leaf stripe of wheat and various diseases on pulses in Pakistan.

DE: Plant-diseases; Forest-trees; insect-pests; trees-; Wheat-; Grain-legumes; diseases-; geographical-distribution; agricultural-entomology; plant-pathology; pines-

OD: *Prunus*-; *Pinus*-; *Cedrus-libani*; Citrus-; *Xanthomonas-campestris-pv.-citri*; bacteria-; arthropods-; *Triticum*-

GE: Lebanon-; Oman-; Pakistan-

BT: trees; woody-plants; Spermatophyta; plants; arthropod-pests; pests; animals; arthropods; invertebrates; insects; Fabaceae; Fabales; dicotyledons; angiosperms; Rosaceae; Rosales; Pinaceae; Pinopsida; gymnosperms; *Cedrus*; Rutaceae; Sapindales; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Poaceae; Cyperales; monocotyledons; Mediterranean-Region; Middle-East; West-Asia; Asia; South-Asia

CC: FF600; KK110; KK100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Silviculture; Forestry-General

PT: Journal-article

UD: 951216

AN: 881104147

Record 142 of 298 - CABPESTCD 1973-1988

TI: Chemical compatibility between an anti-infective compound and miticides used in citrus culture.

OT: Compatibilidade quimica entre desinfetante e acaricidas usados em citricultura.

AU: Vasques-RMP; Matsunaga-AK; Yoneda-H; Yajima-TW; Piedade-MF; Almeida-JB-de; De-Almeida-JB

AD: Engenheiro Agron., Pesquisador Cientifico, Secao Quimica, Inst. Biol., Brazil.

SO: Biologico. 1985, 51: 11, 291-294; 3 fig.; 12 ref.

PY: 1985

LA: Portuguese

LS: English

AB: The chemical compatibility of the antiinfective compound benzalkonium chloride and the acaricides dicofol and binapacryl was tested in citrus culture. Mixing of the antiinfective compound and the acaricides was recommended to avoid simultaneous infection of citrus canker and a virus disease transmitted by the tenuipalpid *Brevipalpus phoenicis* in trough packing boxes and vehicles. Experimental mixtures analysed at different time intervals showed chemical compatibility, but the binapacryl concentration had decreased slightly after 6 days.

DE: Cankers-; Compatibility-; control-; acaricides-; Dicofol-; Binapacryl-; Benzalkonium-chloride; arthropod-pests; transmission-; vectors-; fruits-; fruit-crops; chemical-control; pest-control; agricultural-entomology

OD: Bacteria-; Acari-; Tenuipalpidae-; *Brevipalpus-phoenicis*; Citrus-; plant-viruses; viruses-; arthropods-

RN: 115-32-2; 485-31-4

BT: pesticides; bridged-diphenyl-acaricides; acaricides; arthropods; invertebrates; animals; pests; prokaryotes; Arachnida; Prostigmata; Acari; *Brevipalpus*; Tenuipalpidae; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; viruses

CC: FF600; HH000; HH400

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Control-by-Chemicals-and-Drugs

PT: Journal-article

UD: 951216

AN: 881103938

Record 143 of 298 - CABPESTCD 1973-1988

TI: Combinations of picloram, triclopyr and 2,4-D for citrus eradication.

OT: Efeitos de misturas de picloram, triclopyr e 2,4-D, em tres formulacoes, na erradicacao de pomares de citros.

AU: Santos-CAL-dos; Blanco-HG

AD: Secao de Herbicidas, Inst. Biol., Sao Paulo, Brazil.

SO: Biologico. 1985, 51: 10, 271-275; 16 ref.

PY: 1985

LA: Portuguese

LS: English

AB: A field trial was conducted in Sao Paulo to test picloram + triclopyr + 2,4-D for Citrus spp. eradication. Treatments were Togar AEE (90 g picloram amine + 180 g triclopyr ester + 167 g 2,4-D ester) + 30% kerosene + 10% Agral wetter + 64% or 62% water; Togar RTU, formulated as for Togar AEE except in 10% kerosene at 193 ml/plant; Togar EEE, formulated as for AEE but herbicides as esters; Togar EEE at 5 and 7% a.i. in diesel oil; picloram + 2,4,5-T in diesel oil; and 2,4-5-T in diesel oil. Togar EEE was superior to Togar AEE and Togar RTU; and diesel oil in the formulation was better than kerosene. Treatments made to injured plants were most effective. It was concluded that Togar EEE at 7% a.i. in diesel oil can be used instead of herbicides containing 2,4,5-T for Citrus spp. eradication for controlling Citrus canker [*Xanthomonas campestris* citri].

DE: Weeds-; control-; chemical-control; picloram-; triclopyr-; 2,4-D; 2,4,5-T; formulations-; hosts-of-plant-diseases; Woody-weeds; diseases-; tree-fruits; subtropical-fruits; citrus-fruits; fruit-crops

OD: *Xanthomonas-campestris*-pv.-citri; Citrus-

GE: Brazil-

ID: Citrus-(weed)

RN: 1918-02-1; 55335-06-3; 94-75-7; 5742-19-8; 2008-39-1; 3599-58-4; 2569-10-9; 94-11-1; 1929-73-3; 94-80-4; 25168-26-7; 93-76-5; 3813-14-7; 57213-69-1; 2545-59-7; 93-79-8; 25168-15-4; 7173-98-0

BT: plants; picolinic-acid-herbicides; aromatic-acid-herbicides; herbicides; pesticides; pyridine-herbicides; phenoxyacetic-herbicides; phenoxy-herbicides; host-plants; woody-plants; Spermatophyta; weeds; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; South-America; America

CC: HH400; FF500; HH000; FF600

CD: Control-by-Chemicals-and-Drugs; Weeds-and-Noxious-Plants;

Pathogen,-Pest-and-Parasite-Management-General; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951216

AN: 880709662

Record 144 of 298 - CABPESTCD 1973-1988

TI: Plant disease quarantine.

AU: Baldock-AK

AD: Horticultural Branch, Queensland Dep. Primary Indust., Brisbane, Qld., Australia.

SO: Queensland-Agricultural-Journal. 1987, 113: 5, 303-304.

PY: 1987

LA: English

AB: A brief account is given of measures taken to prevent the spread of citrus canker [*Xanthomonas campestris* pv. citri] and black sigatoka of banana [*Mycosphaerella fijiensis* var. difformis] into Australia from Papua New Guinea.

DE: Legislation-; quarantine-; Bananas-; fruit-crops; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; Musa-

GE: Australia-; Queensland-

ID: *Mycosphaerella-fijiensis*-var.-difformis

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Musaceae; Zingiberales; monocotyledons; Australasia; Oceania; Australia; *Mycosphaerella-fijiensis*; *Mycosphaerella*; Dothideales; Ascomycotina; Eumycota; fungi

CC: FF600; DD500

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Laws-and-Regulations

PT: Journal-article

IS: 0157-7786

UD: 951216

AN: 881340876

Record 145 of 298 - CABPESTCD 1973-1988

TI: Pest and disease records. United States of America.
CA: APHIS, USDA.
SO: Quarterly-Newsletter,-Asia-and-Pacific-Plant-Protection-Commission,-FAO,-Thailand. 1986, 29: 3, 37-38.
PY: 1986
LA: English
AB: Details are given of the most recent information on the geographical distribution of citrus canker, *Xanthomonas campestris* pv. *citri*, including Florida, where the eradication campaign continues.
DE: geographical-distribution; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Florida-; USA-
ID: eradication
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
UD: 951216
AN: 871338852

Record 146 of 298 - CABPESTCD 1973-1988

TI: Analysis of factors involved in the resistance to citrus canker.
AU: Zubrzycki-HM; Zubrzycki-AD-de
AD: EEA-INTA Bella Vista, CC 5, 3432 Bella Vista, Corrientes, Argentina.
SO: Boletin-Genetico,-Instituto-de-Fitotecnica,-Castelar,-Argentina. 1986, No. 14, 21-33; 27 ref.
PY: 1986
LA: English
LS: Spanish
AB: The topic is reviewed, with sections on conditions predisposing a plant to *Xanthomonas campestris* pv. *citri*, methods for field evaluation, the relationship between shoot development and disease response, shoot infection and its relationship with environmental conditions, effects of rootstock and copper application, type of resistance, resistance reactions and selection for resistance. Variability present within collections and commercial populations is illustrated by the example of Valencia Late orange clones, which can be ranked from very resistant to moderately susceptible. Grapefruit varieties showed a range of infection, but values were higher than those for orange and the range was narrower.
DE: reviews-; varietal-reactions; oranges-; grapefruits-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas*-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-; Citrus-paradisi
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Pseudomonadaceae; Gracilicutes; *Xanthomonas-campestris*; *Xanthomonas*; Citrus
CC: FF020; FF600; HH600
CD: Plant-Breeding-and-Genetics; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity
PT: Journal-article
UD: 951216
AN: 871665708

Record 147 of 298 - CABPESTCD 1973-1988

TI: Citrus canker in Florida.
AU: Schoulties-CL; Civerolo-EL; Miller-JW; Stall-RE; Krass-CJ; Poe-SR; DuCharme-EP
AD: Florida Dep. Agric. Consumer Serv., Gainesville, FL, USA.
SO: Plant-Disease. 1987, 71: 5, 388-395; 5 col. fig.; 23 ref.
PY: 1987
LA: English

AB: Following a brief biological and historical account of this disease, caused by *Xanthomonas campestris* pv. citri, details are given of the initial detection/diagnosis, symptoms, distribution and citrus hosts of the nursery form of the disease. The eradication programme used in the 2 yr following detection of the disease in Florida in Sep. 1984 is described. The Asiatic form of citrus canker was diagnosed in 1985 and further outbreaks in 1986 led to the application of stringent eradication measures. The perspectives and prospects for the citrus industry are discussed, with costs of the eradication programme and losses due to quarantine regulations prohibiting export to certain areas. It is hoped that support will continue so that once again citrus canker will be eradicated from this State.

DE: reviews-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Florida-; USA-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 871336109

Record 148 of 298 - CABPESTCD 1973-1988

TI: Use of *Xanthomonas campestris* pv. vesicatoria to evaluate surface disinfectants for canker quarantine treatment of citrus fruit.

AU: Brown-GE; Schubert-TS

AD: Sci. Res. Dep., Florida Dep. Citrus, Lake Alfred, FL 33850, USA.

SO: Plant-Disease. 1987, 71: 4, 319-323; 17 ref.

PY: 1987

LA: English

AB: Florida citrus packinghouses are required by quarantine regulations to use chlorine or sodium orthophenylphenate (SOPP) to surface-sanitize asymptomatic fruit to eradicate citrus canker (*X. campestris* pv. citri). Treatments with chlorine or SOPP in soak or spray applications require exposures for 2 and 1 min, respectively, whereas soap formulations of SOPP applied during washing require 45 s. Applications of chlorine or SOPP during washing for 30 s were as effective as the longer exposures currently required. Wash applications of dual quaternary ammonium compounds, formulations of chlorine dioxide, or peracetic acid for a similar time were equally effective. *X. campestris* pv. vesicatoria was used in the studies as the assay bacterium because it responded similarly to the canker bacterium in in vitro disinfectant tests and could be used outside of quarantine facilities.

DE: quarantine-; assays-; disinfectants-; Techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; *Xanthomonas-campestris*-pv.-vesicatoria; bacteria-

ID: eradication

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 871335639

Record 149 of 298 - CABPESTCD 1973-1988

TI: Control of citrus canker (*Xanthomonas citri* Hasse Dow) on grapefruits (*Citrus paradisi* Macfayen).

OT: Control de la cancrrosis de los citricos (*Xanthomonas citri* Hasse Dow) en pomelo (*Citrus paradisi* Macfayen).

AU: Falico-de-Alcaraz-G

AD: Agric. Exp. Sta. INTA, 3432 Bella Vista, Argentina.

SO: Fitopatologia. 1982, 17: 1, 48-53; 6 ref.

PY: 1982
 LA: Spanish
 LS: English
 AB: In field trials using various fungicides and antibiotics, effectiveness of treatment was evaluated by considering leaf damage caused by *X. [campestris pv.] citri* and the percentage of diseased fruits. Tribasic copper sulphate (0.5%) gave the best results, control being improved in some tests by the addition of Agrimycin 100 [streptomycin] at 0.12% or Manzate D (maneb + zineb) at 0.2%.
 DE: control-; Grapefruits-; Streptomycin-; Maneb-; Zineb-; diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
 OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-; Citrus-paradisi
 GE: Argentina-
 ID: Tribasic-copper-sulphate; Agrimycin-100; Manzate-D
 RN: 57-92-1; 12427-38-2; 12122-67-7
 BT: dithiocarbamate-fungicides; carbamate-pesticides; pesticides; fungicides; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus; South-America; America
 CC: FF600; HH000
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
 PT: Journal-article
 UD: 951216
 AN: 871333229

Record 150 of 298 - CABPESTCD 1973-1988

TI: Detection of *Xanthomonas campestris* pv. *citri* "A" by means of the ELISA (DAS) technique.
 OT: Deteccion de *Xanthomonas campestris* pv. *citri* "A" mediante la tecnica de ELISA (DAS).
 AU: Canale-F; Cassanello-ME
 AD: Sanidad Vegetal, Montevideo, Uruguay.
 SO: Fitopatologia. 1985, 20: 1, 7-11; 6 ref.
 PY: 1985
 LA: Spanish
 LS: English
 AB: The technique was evaluated for the specific detection and identification of *X. campestris* pv. *citri* and diagnosis of citrus canker in the field. Antisera with a titre > 2500 were prepared from heat killed cells of the Uruguayan type A str. Specificity was determined using different isolates of type A from Uruguay, Japan and Brazil and type B from Uruguay and Argentina, and other bacterial str. Positive reactions occurred with all isolates of type A and a weak reaction with those of type B. The sensitivity was 103 cfu/ml. It is concluded that the A type bacteria are closely related serologically, while the Uruguayan A and B types are weakly related. *X. campestris* pv. *citri* was also detected by ELISA in extracts of lesions from inoculated grapefruit leaves.
 DE: IMMUNODIAGNOSIS-; Grapefruits-; Techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
 OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-; Citrus-paradisi
 GE: Uruguay-
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus; South-America; America
 CC: FF600; ZZ900
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology
 PT: Journal-article
 UD: 951216
 AN: 871330047

Record 151 of 298 - CABPESTCD 1973-1988

TI: Preliminary experiments with remote sensing to detect citrus canker.
 AU: Edwards-GJ; Balzquez-CH
 AD: Univ. Florida, Inst. Food Agric. Sci., Lake Alfred, FL 33850, USA.
 SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1986, 98: 16-18; 10 ref.

PY: 1986

LA: English

AB: Aerial and ground remote sensing techniques, using 35 mm natural colour film, colour IR film, and narrowband filtered black and white video were used to examine leaves affected by citrus canker (*Xanthomonas campestris* pv. *citri*). Where the leaf spot or spots were <0.5% of the total viewing area, it was necessary that the camera be close enough to examine 3 or 4 leaves. Grapefruit leaves were examined from plants that had been infected for 7-69 d. Natural colour transparencies taken 7 d after inoculation revealed small yellow-green spots against a light green background. Colour IR transparencies showed the same area as yellow-white spots against a magenta background. Photography could be used to detect canker on colour and colour IR film up to 12 ft from the infected plant. Aerial colour and aerial colour IR film could not differentiate infected nursery trees from healthy nursery trees at a scale of 1 to 150. Narrowband filtered video of 7-d infected leaves with the 550 and 700 nm bands yielded the best contrast for image analysis. The image analysis of a canker suspect in the field was compared with the 30-d infected plant in the greenhouse. The digitized image of the canker lesion was the brightest area whereas that of the suspect lesion (negative for canker) was the darkest area in the leaf.

DE: detection-; photography-; Grapefruits-; Techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-; Citrus-paradisi

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; Citrus

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0886-7283

UD: 951216

AN: 871329550

Record 152 of 298 - CABPESTCD 1973-1988

TI: Effects of postharvest chlorine and wax treatments on surface microflora of lime fruit in relation to citrus bacteriosis disease.

AU: Stapleton-JJ

AD: USDA, ARS, Tecoman, Colima, Mexico.

SO: Plant-Disease. 1986, 70: 11, 1046-1048; 11 ref.

PY: 1986

LA: English

AB: Citrus bacteriosis (CB), a suspected form of citrus canker (*Xanthomonas campestris* pv. *citri*) is expressed as lesions on leaves and twigs of Mexican lime (*Citrus aurantiifolia*) as well as on other citrus plants in Colima, Mexico. Immersion of Mexican and Persian lime [*C. lotifolia*] fruit in 200 p.p.m. Cl, as NaOCl, for 2 min is a prerequisite for movement of fruit out of CB quarantine areas even though no bacteriosis symptoms have been observed on fruit. In addition, most Mexican citrus packers spray fruit with a protective wax coating before shipping. The effects of these treatments on lime surface microflora were evaluated. Total bacteria were reduced by 77-99+%, and fungi by 81-100% in assays of fruit washings from limes treated with 50-900 p.p.m. Cl as NaOCl. Nevertheless, total bacterial populations of 2.7×10^2 - 2.9×10^3 cfu/cm² of fruit surface survived Cl concn above the mandated 200 p.p.m. level. No naturally occurring *Xanthomonas* spp. were recovered from fruit washings, although bacteria artificially inoculated in high concn were recovered at least 2 wk later on lime surfaces. Presumptive *X. c.* pv. *citri* was not eradicated when intact or wounded fruit were artificially inoculated with high concn of cells, then immersed in 200 p.p.m. Cl for 2 min. The protective wax used in Colima did not increase the efficacy of Cl treatment.

DE: MICROBIAL-FLORA; fruit-; Limes-; Sodium-hypochlorite; activity-; Wax-coatings; control-; quarantine-; Legislation-; diseases-; fruits-; microorganisms-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; Citrus-latifolia; bacteria-

GE: Mexico-

RN: 7681-52-9

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; Citrus; North-America; America

CC: FF600; HH000; DD500

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General;
Laws-and-Regulations
PT: Journal-article
IS: 0191-2917
UD: 951216
AN: 871328323

Record 153 of 298 - CABPESTCD 1973-1988

TI: Control of Mexican lime bacteriosis with copper-based products.
AU: Medina-Urrutia-VM; Stapleton-JJ
AD: INIA-CAE Tecoman, Colima, 28100, Mexico.
SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1985, publ. 1986, 98: 22-25; 10 ref.
PY: 1985
LA: English
AB: Mexican lime bacteriosis (MLB), suspected to be a form of citrus canker (*Xanthomonas campestris* pv. *citri*), was first detected in leaves of Mexican limes in 1981 and now affects > 20 000 ha in 5 States. Results of 8 experiments conducted between 1983 and 1985 indicated that 2-4 sprays of copper oxychloride (CuOCl) or tribasic-copper sulphate reduced the percentages of leaves infected by 30-80 compared with untreated controls. Similar reductions in the numbers of lesions/total leaves and lesions/infected leaves were found. Better MLB control on young shoots was achieved by spraying with 2.5 g CuOCl/litre 2 or 3 times than by administering the total dosage (5 or 7.5 g/litre, respectively) in a single application. Other experiments showed that Zn/maneb or CuOCl/maneb mixtures gave better control than CuOCl, basic copper sulphate or terramycin-copper sulphate.
DE: Limes-; diseases-; control-; Copper-oxychloride; COPPER-SULFATE; Zinc-; Maneb-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris*-pv.-*citri*; Citrus-; bacteria-
GE: Mexico-
RN: 1332-40-7; 7758-98-7; 7440-66-6; 12427-38-2
BT: copper-fungicides; fungicides; pesticides; dithiocarbamate-fungicides; carbamate-pesticides; bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; North-America; America
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0886-7283
UD: 951216
AN: 860340416

Record 154 of 298 - CABPESTCD 1973-1988

TI: Relationship between development of citrus canker and rootstock cultivars for young 'Valencia' orange trees in Misiones, Argentina.
AU: Agostini-JP; Graham-JH; Timmer-LW
AD: Instituto Nacional de Tecnologia Agropecuaria, Misiones, Argentina.
SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1985, publ. 1986, 98: 19-22; 9 ref.
PY: 1985
LA: English
AB: In 1980, symptoms of citrus canker (*Xanthomonas campestris* pv. *citri*) appeared in an experimental planting of Valencia orange on 20 different rootstocks established the previous year. The rootstocks were grouped in 3 vigour categories and it was found that the rate of disease spread was higher for trees on vigorous and intermediate rootstocks than on non-vigorous rootstocks. The rate of increase in disease severity was also greater on vigorous and intermediate rootstocks, such as rough lemon and Carrizo citrange, than on non-vigorous trifoliate orange. By 1985, the canker severity was linearly correlated with canopy volume on all rootstocks. There was also a strong linear correlation ($r = 0.93$) between disease incidence and severity.
DE: Oranges-; diseases-; rootstock-scion-relationships; rootstocks-; Rough-lemons; Citranges-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-citri; Citrus-; Poncirus-trifoliata; bacteria-; Citrus-jambhiri
GE: Argentina-
ID: Citrus-sinensis-X-Poncirus-trifoliata
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Poncirus; Citrus; South-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0886-7283
UD: 951216
AN: 860340415

Record 155 of 298 - CABPESTCD 1973-1988

TI: A role of extracellular polysaccharides of *Xanthomonas campestris* pv. citri in bacterial adhesion to citrus leaf tissues in preinfectious stage.
AU: Takahashi-T; Doke-N
AD: Fac. Agric., Nagoya Univ., Nagoya 464, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1984, 50: 5, 565-573; 1 fig., 3 tab.; 27 ref.
PY: 1984
LA: English
LS: Japanese
AB: Unwashed bacterial cells of the citrus canker pathogen were found to adhere preferentially to a wounded portion of citrus leaf tissues rather than intact leaf surfaces. Washed bacterial cells of *X. campestris* pv. citri and unwashed bacterial cells of a colony mutant lacking the ability to produce extracellular polysaccharides (EPS) hardly adhered, even to wounded tissues of citrus leaves. The adhesion of unwashed bacterial cells was inhibited when the wounded leaf tissues were pretreated either with D-glucosamine pronase or low pH citrate buffer. The adhesion of unwashed bacterial cells was also observed to the discs of various nonhost tissues to a certain extent, but it was not influenced by pretreatment with D-glucosamine. These results suggested that *X. campestris* pv. citri adhered to host tissues through the EPS-agglutinin interaction and that the process might be involved in the initial step for establishing the host-parasite relationship in citrus canker.
DE: adhesion-; polysaccharides-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-9473
UD: 951216
AN: 861318372

Record 156 of 298 - CABPESTCD 1973-1988

TI: Evaluation of chemicals for the control of citrus canker.
AU: Krishna-A; Nema-AG
AD: Reg. Res. Sta., J.N.K.V.V., Khandwa 450 001, India.
SO: Indian-Phytopathology. 1983, recd. 1986, 36: 2, 348-350; 1 tab.; 4 ref.
PY: 1983
LA: English
AB: The best control of *Xanthomonas campestris* pv. citri was achieved with streptomycin at 500 p.p.m. with a 4-spray schedule, followed by paushamycin, plantomycin, Bordeaux mixture and agrimycin.
DE: control-; Bordeaux-mixture; diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-
ID: Streptomycin; Paushamycin; Plantomycin; Agrimycin

RN: 8011-63-0
BT: copper-fungicides; fungicides; pesticides; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0367-973X
UD: 951216
AN: 861317778

Record 157 of 298 - CABPESTCD 1973-1988

TI: Records of coffee bean weevil, *Araecerus fasciculatus* DeGeer (Coleoptera: Anthribidae) feeding on citrus fruit in Japan.
AU: Fujii-H; Kashio-T; Ujiye-T
AD: Fruit Tree Res. Sta., Kuchinotsu Branch, Nagasaki 859-25, Japan.
SO: Proceedings-of-the-Association-for-Plant-Protection-of-Kyushu. 1985, 31: 202-203; 7 ref.
PY: 1985
LA: Japanese
LS: English
AB: Larvae of *Araecerus fasciculatus* were observed for the first time in October 1984 feeding and developing inside citrus fruit in a grove in Kuchinotsu, Japan. The orange cultivars Trovita, Joppa, Parson Brown, Valencia, Ogasawra, and Fukuhara were infested with the anthribid, and navel oranges were severely affected. All larvae were found under or around lesions of citrus canker in the peel, suggesting that infestation with the anthribid was closely related to the occurrence of the disease. Satsuma-mandarin, Hassaku (*Citrus hassaku*) and Kawanonatsudaikai (*C. natsudaikai*) oranges were not infested.
DE: Varietal-susceptibility; Mandarins-; oranges-; fruits-; fruit-crops; entomopathogens-; pathogens-; agricultural-entomology; natsudaikais-
OD: Citrus-hassaku; Citrus-natsudaikai; *Araecerus-fasciculatus*; Citrus-; arthropods-
GE: Japan-; Kyushu-
ID: Citrus-canker
BT: Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Araecerus*; Anthribidae; Coleoptera; insects; arthropods; invertebrates; animals; East-Asia; Asia; Japan
CC: FF600; HH100
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control
PT: Journal-article
IS: 0385-6410
UD: 951216
AN: 860534530

Record 158 of 298 - CABPESTCD 1973-1988

TI: Behaviour of tangerine cultivars to citrus canker caused by *Xanthomonas campestris* pv. *citri*.
OT: Comportamento de cultivares de tangerinas ao cancro citrico causado por *Xanthomonas campestris* pv. *citri*.
AU: Mohan-SK; Leite-Junior-RP; Pereira-ALG; Campacci-CA
AD: Inst. Agron. Parana, Londrina, PR, Brazil.
SO: Fitopatologia-Brasileira. 1985, 10: 3, 549-558; 1 graph, 5 tab.; 19 ref.
PY: 1985
LA: Portuguese
LS: English
AB: The reaction of mandarin cultivars and hybrids grafted on Rangpur lime and Clementina mandarin rootstocks to citrus canker was evaluated in the field. No consistent differences were found between the rootstocks as to their influence on the reaction of the scion. Seven of the cultivars, including Ponkan, were resistant and 7 moderately so.
DE: varietal-reactions; Mandarins-; diseases-; cultivars-; rootstock-scion-relationships; Clementines-; rootstocks-; Limes-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; Citrus-reticulata; *Xanthomonas*-; bacteria-; Citrus-clementina

GE: Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus; South-America; America
CC: FF600; FF020; HH600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Breeding-and-Genetics;
Host-Resistance-and-Immunity
PT: Journal-article
IS: 0100-4158
UD: 951216
AN: 861317010

Record 159 of 298 - CABPESTCD 1973-1988

TI: Annual Report, 1984-85, Queensland Department of Primary Industries.

SO: 1985, 48 pp.; 43 fig. (15 col.) See RPP 64, 3666.

PB: Qd. Dep. Primary Industries; Brisbane, Qd.; Australia

PY: 1985

LA: English

AB: In the plant pathology section (29-30) it is noted that further attempts to eradicate black sigatoka [*Mycosphaerella fijiensis* var. *difformis*] disease of bananas in the Torres Strait region were abandoned; movement of bananas from this region to other parts of Australia is prohibited. Difficulties were encountered in controlling cucurbit powdery mildew [*Sphaerotheca fuliginea*] owing to the increasing incidence of fungicide-resistant str. Solarization gave good control of *Verticillium* wilt of tomato but was ineffective against race 3 of *Fusarium* [*oxysporum* f.sp. *lycopersici*] which threatens tomato crops in the Bowen area. *Phytophthora* root rot of soyabean was recorded in the major growing areas of southern Qd.; anthracnose [*Glomerella cingulata*] was the major problem affecting *Stylosanthes* and zucchini yellow mosaic virus affected a range of cucurbits in SE Qd. Cotton bacterial blight [*Xanthomonas campestris* pv. *malvacearum*] was widespread in central and southern regions; citrus canker [*X. campestris* pv. *citri*] was found on West Indian limes and sweet orange on Thursday Island and infected trees destroyed; and the most serious disease of the expanding mango industry is bacterial black spot [*X. campestris* pv. *mangiferaeindicae*].

DE: Bananas-; diseases-; Tomatoes-; Avocados-; Soyabeans-; Cotton-; Mangoes-; Legislation-; plant-diseases; control-; limes-; oranges-; Solar-radiation; plant-pathogenic-bacteria; fibre-plants; fruit-crops; fruit-vegetables; plant-pathology

OD: Cucurbitaceae-; *Stylosanthes*-; Citrus-; *Sphaerotheca-fuliginea*; *Verticillium*-; *Fusarium-oxysporum-f.sp.-lycopersici*; *Phytophthora*-; *Phytophthora-megasperma*; *Glomerella-cingulata*; *Xanthomonas-campestris-pv.-malvacearum*; *Xanthomonas-campestris-pv.-citri*; *Xanthomonas-campestris-pv.-mangiferaeindicae*; Fungi-; bacteria-; Musa-; *Lycopersicon-esculentum*; *Persea-americana*; *Glycine-Fabaceae*; *Gossypium*-; *Mangifera-indica*;

ZUCCHINI-YELLOW-MOSAIC-POTYVIRUS

GE: Australia-; Queensland-

ID: Dep-Primary-Industries; *Mycosphaerella-fijiensis-var-difformis*; Zucchini-yellow-mosaic-virus; Phosphorous-acid

BT: bacteria; prokaryotes; plants; Violales; dicotyledons; angiosperms; Spermatophyta; Fabaceae; Fabales; Rutaceae; Sapindales; *Sphaerotheca*; Erysiphales; Ascomycotina; Eumycota; fungi; Deuteromycotina; *Fusarium-oxysporum*; *Fusarium*; Peronosporales; Mastigomycotina; *Phytophthora*; *Glomerella*; Polystigmatales; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Musaceae; Zingiberales; monocotyledons; *Lycopersicon*; Solanaceae; Solanales; *Persea*; Lauraceae; Laurales; Malvaceae; Malvales; *Mangifera*; Anacardiaceae; potyvirus-group; plant-viruses; viruses; Australasia; Oceania; Australia; *Mycosphaerella-fijiensis*; *Mycosphaerella*; Dothideales

CC: FF600; DD500; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Laws-and-Regulations;
Pathogen,-Pest-and-Parasite-Management-General

PT: Annual-report

UD: 951216

AN: 861315816

Record 160 of 298 - CABPESTCD 1973-1988

TI: Outbreaks and new records. United States. Citrus canker on citrus.
CA: USDA.
SO: FAO-Plant-Protection-Bulletin. 1985, 33: 1, 44.
PY: 1985
LA: English
AB: An infestation of *Xanthomonas campestris* pv. *citri* is reported from 6 nurseries in Fla. The pathogen is a distinct str., different from any reported elsewhere, including Mexico. Eradication measures are being taken.
DE: strains-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Florida-; USA-
ID: eradication
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0254-9727
UD: 951216
AN: 851309985

Record 161 of 298 - CABPESTCD 1973-1988

TI: A new outbreak of citrus canker in Florida.
AU: Schoulties-CL; Miller-JW
AD: Florida Dep. Agric., Gainesville, FL 32602, USA.
SO: Plant-Disease. 1985, 69: 4, 361.
PY: 1985
LA: English
AB: An outbreak of the disease caused by *Xanthomonas campestris* pv. *citri* in a citrus nursery is described. An eradication programme is in progress.
DE: fruit-crops; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*
GE: Florida-; USA-
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0191-2917
UD: 951216
AN: 851309458

Record 162 of 298 - CABPESTCD 1973-1988

TI: Role of extracellular polysaccharides of *Xanthomonas campestris* pv. *citri* in the early stage of infection.
AU: Goto-M; Hyodo-H
AD: Fac. Agric., Shizuoka Univ., Ohya, Shizuoka 422, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1985, 51: 1, 22-31; 4 fig., 5 tab.; 13 ref.
PY: 1985
LA: English
LS: Japanese
AB: Strs. of the citrus canker pathogen did not produce detectable amounts of ethylene in yeast-extract peptone

broth and a synthetic medium containing methionine. Citrus leaves inoculated with the bacterium, however, produced ethylene at 3 different stages: early (1-6 h after inoculation), intermediate (10-24 h) and late (72-120 h until defoliation). Ethylene biosynthesis in the early stage was also demonstrated by the infiltration of extracellular polysaccharides (EPS) of the bacterium and various polysaccharides such as carboxymethylcellulose, xylan, polyethyleneglycol, starch, inulin, glycogen, pectin and lipopolysaccharides extracted from the bacterium. More ethylene was produced with EPS than with other polysaccharides or living bacterial cells. Citrus leaf tissues infiltrated with EPS showed no significant changes in the electrolyte leakage and amino acid composition. Ethylene production at the early stage of infection was considered to associate with the 'early selective protection' of citrus leaf tissue. When the leaf water potential was increased by allowing detached leaves to absorb free water from the cut end of leaf petioles, water congestion was reproduced even after 3 wk on citrus leaves which had previously been injected with polysaccharides. Although the same phenomenon was observed with other polysaccharides, the degree of recovered water-soaking was most conspicuous with EPS. Bacterial cells suspended in water were protected by EPS, resulting in marked increases in their survival rates.

DE: ethylene-; polysaccharides-; water-potential; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas campestris*-pv.-citri; bacteria-

GE: Japan-

RN: 74-85-1

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; East-Asia; Asia

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-9473

UD: 951216

AN: 851308969

Record 163 of 298 - CABPESTCD 1973-1988

TI: Citrus canker on Thursday Island.

AU: Jones-DR; Moffett-ML; Navaratnam-SJ

AD: Pl. Path. Branch, Dep. Primary Industries, Meiers Rd., Indoorpilly, Qd. 4066, Australia.

SO: Australasian-Plant-Pathology. 1984, 13: 4, 64-65; 7 ref.

PY: 1984

LA: English

AB: This report of *Xanthomonas campestris* pv. *citri* in this Qd. island is only the second notification of the disease since it was eradicated from Australia in 1923. The affected trees and all citrus in the immediate vicinity have been destroyed and movement of citrus plants and fruit to the mainland is prohibited.

DE: control-; legislation-; quarantine-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas campestris*-pv.-citri; bacteria-

GE: Queensland-; Australia-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas campestris; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Australia; Australasia; Oceania

CC: FF600; HH000; DD500

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Laws-and-Regulations

PT: Journal-article

IS: 0815-3191

UD: 951216

AN: 851308382

Record 164 of 298 - CABPESTCD 1973-1988

TI: Citrus canker.

AD: Plant Quarantine Branch, Commonw. Dep. Hlth., Canberra, Australia.

SO: Plant-Quarantine-Leaflet,-Commonwealth-Department-of-Health,-Australia. 1984, No.12, 4 pp.; 4 col. fig., 1 map.

PY: 1984
 LA: English
 AB: Distribution, symptoms, biology, spread and host range of the disease, caused by *Xanthomonas campestris* pv. *citri*, are described and recommendations given for its control. Eradication and quarantine measures in force in Australia are described. An outbreak discovered on Thursday Island in the Torres Strait in 19884 was promptly eliminated.
 DE: control-; quarantine-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
 OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
 GE: Australia-
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Australasia; Oceania
 CC: FF600; HH000
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
 PT: Miscellaneous
 UD: 951216
 AN: 851306890

Record 165 of 298 - CABPESTCD 1973-1988

TI: Some fruit tree diseases in Japan.
 AU: Yamaguchi-A
 AD: Fruit Tree Res. Sta., Japan.
 SO: Japan-Pesticide-Information. 1984, No.45, 7-12; 3 tab.; 10 ref.
 PY: 1984
 LA: English
 AB: The most important diseases of citrus, apple, Japanese pear, peach, grapevine, Japanese persimmon and chestnuts are listed, together with commonly used control measures. Brief accounts are given of citrus canker (*Xanthomonas campestris* pv. *citri*); the spread of citrus mosaic (caused by a virus related to satsuma dwarf virus) and its prevention; invasion of apple scab (*Venturia inaequalis*) and its spread; grapevine ajinashika virus disease; and development of fungicide resistant fungi.
 DE: Fruit-trees; diseases-; grapes-; Chestnuts-; apples-; fruit-crops; plant-pathology
 OD: *Xanthomonas-campestris*-pv.-*citri*; citrus-; *Venturia-inaequalis*; *Vitis*-; *Castanea*-; *Malus*-
 GE: Japan-
 BT: trees; woody-plants; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; *Venturia-Dothideales*; *Dothideales*; Ascomycotina; Eumycota; fungi; Vitidaceae; Rhamnales; Fagaceae; Fagales; Rosaceae; Rosales; East-Asia; Asia
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Journal-article
 IS: 0368-265X
 UD: 951216
 AN: 851306863

Record 166 of 298 - CABPESTCD 1973-1988

TI: A medium for cultivation of the B-strain of *Xanthomonas campestris* pv. *citri*, cause of canker B in Argentina and Uruguay.
 AU: Canteros-de-Echenique-BI; Zagory-D; Stall-RE
 AD: INTA, Bella Vista, Corrientes, Argentina.
 SO: Plant-Disease. 1985, 69: 2, 122-123; 1 fig.; 12 ref.
 PY: 1985
 LA: English
 AB: The wild-type B-str. of the citrus canker bacterium grew only on a medium containing sucrose (1%), peptone (0.5%), dipotassium phosphate (0.05%), magenesium sulphate (0.03%) and Difco purified agar (1.5%). Agars other than Difco purified did not support growth.

DE: strains-; culture-; Techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: Argentina-; Uruguay-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600; ZZ900
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology
PT: Journal-article
IS: 0191-2917
UD: 951216
AN: 851306175

Record 167 of 298 - CABPESTCD 1973-1988

TI: On occurrence of citrus canker disease in south Sichuan.
OT: [Xanthomonas campestris pv. citri].
AU: Lai-CY; Li-LH; Huang-ZY; Deng-DL; Fan-S
AD: Exp. Sta. Hort., Sichuan Agric. Acad. Sci., Jiangjin, China.
SO: Acta-Phytopathologica-Sinica. 1984, 14: 3, 152, 174; 2 tab.
PY: 1984
LA: Chinese
DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: China-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; East-Asia; Asia
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0412-0914
UD: 951216
AN: 851306144

Record 168 of 298 - CABPESTCD 1973-1988

TI: Effects of various machine-copper emulsifiable powders (tentative name) against the citrus red mite [Panonychus citri] and citrus canker [in Japan].
AU: Okamoto-K; Nishizawa-T; Takatsuki-S
AD: Mikasa Chemical Ind. Co., Ltd., Fukuoka 813, Japan.
SO: Proceedings-of-the-Association-for-Plant-Protection-of-Kyushu. 1984, 30: 172-174; 3 fig.; 2 ref.
PY: 1984
LA: Japanese
DE: distribution-; control-; acaricides-; food-plants; pests-; diseases-; fruits-; fruit-crops; subtropical-fruits; citrus-fruits; agricultural-entomology
OD: Panonychus-citri; Citrus-; Xanthomonas-campestris-pv.-citri
GE: Japan-
BT: pesticides; animals; Panonychus; Tetranychidae; Prostigmata; Acari; Arachnida; arthropods; invertebrates; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; East-Asia; Asia
CC: FF600; HH000; HH400
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Control-by-Chemicals-and-Drugs
PT: Journal-article
IS: 0385-6410
UD: 951216
AN: 850523600

Record 169 of 298 - CABPESTCD 1973-1988

TI: Effect of some climatic factors on the index of infection of citrus canker caused by *Xanthomonas campestris* pv. *citri* on Valencia orange (*Citrus sinensis*), in Bataguassu, M.S.
OT: Influencia de alguns fatores climaticos sobre o indice de infeccao de cancro citrico, causada por *Xanthomonas campestris* pv. *citri*, em laranjeira Valencia (*Citrus sinensis*), em Bataguassu, M.S.
AU: Palazzo-DA; Malavolta-Junior-VA; Nogueira-EM-de-C
AD: Inst. Biol., Sao Paulo, SP, Brazil.
SO: Fitopatologia-Brasileira. 1984, 9: 2, 283-290; 2 graphs; 12 ref.
PY: 1984
LA: Portuguese
LS: English
AB: Infection was max. in Jan. and Feb. in this area of Brazil and increased at temps. > 20°C and during rainfall. Severe infection occurred on the N. and W. sides of trees, probably because sand carried by locally prevalent winds caused wounds, which favoured penetration of the pathogen.
DE: Oranges-; environmental-factors; wounds-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris*-pv.-*citri*; Citrus-; bacteria-
GE: Brazil-
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; South-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0100-4158
UD: 951216
AN: 851304632

Record 170 of 298 - CABPESTCD 1973-1988

TI: *Pseudomonas fluorescens* is an antagonist to *Xanthomonas citri* (Hasse) Dye, the incitant of citrus canker.
AU: Unnamalai-N; Gnanamanickam-SS
AD: Cent. Advanced Studies, Bot., Univ. Madras, Madras 600 005, India.
SO: Current-Science,-India. 1984, 53: 13, 703-704; 1 tab., 2 fig.; 13 ref.
PY: 1984
LA: English
AB: A plant growth-promoting, rhizobacterium-like str. of *P. fluorescens* which prevented the development of *X. campestris* pv. *citri* in vitro was isolated from cankered citrus leaves collected from 3 locations in Madras.
DE: interactions-; antagonism-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Pseudomonas-fluorescens*; bacteria-
GE: India-
BT: bacteria; prokaryotes; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Pseudomonas*; South-Asia; Asia
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
UD: 951216
AN: 851304404

Record 171 of 298 - CABPESTCD 1973-1988

TI: Temporal and spatial spread of citrus canker within groves.
AU: Danos-E; Berger-RD; Stall-RE
AD: Dep. Pl. Path., Univ. Florida, Gainesville 32611, USA.
SO: Phytopathology. 1984, 74: 8, 904-908; 3 fig., 2 tab.; 16 ref.
PY: 1984

LA: English

AB: The spread of canker (*Xanthomonas campestris* pv. *citri*) was studied in 2 citrus groves in Argentina. Disease gradients were obtained by plotting the proportion of diseased trees in individual rows or subplots of grouped rows versus distances from inoculum sources. The Gompertz transformation was used to linearize the gradients when plotted versus log₁₀ (distance). In the regression equation for the linearized disease gradients, the slope *b* ranged from -0.2 to -4.13. Disease incidence increased faster near inoculum sources; thus, disease gradients became steeper with time. The increasing steepness of the gradients was evident 40 months after an inoculum source had been eradicated. Slope values were c. the same for 4 scion-rootstock combinations at a given value of the Y-intercept (*a*). However, *a* and *b* increased slower in time on a resistant scion-resistant rootstock combination. Foci were detected by double analysis. Primary spread of canker resulted in a distribution of diseased trees that was sparse, but with a gradient. Diseased trees were not aggregated in the early spread. The later secondary spread was limited, and incidence increased faster near the inoculum source. Aggregation of diseased trees then occurred.

DE: spread-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-

GE: Argentina-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 841303053

Record 172 of 298 - CABPESTCD 1973-1988

TI: The mystery of Florida's citrus canker.

AU: Sun-M

SO: Science,-USA. 1984, 226: 4672, 322-323; 1 fig.

PY: 1984

LA: English

AB: The recent outbreak of citrus canker (*Xanthomonas campestris* pv. *citri*) in nurseries and its control are reviewed. An apparently new str. of the pathogen is involved and the origin of the outbreak is as yet unknown.

DE: epidemiology-; strains-; diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*

GE: Florida-; USA-

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951216

AN: 841302940

Record 173 of 298 - CABPESTCD 1973-1988

TI: Production of phytoalexin-like substances in the citrus leaves inoculated with a bacterium (*Pseudomonas* sp.) antagonistic against *Xanthomonas campestris* pv. *citri*.

AU: Ota-T

AD: Nagasaki Fruit-Tree Exp. Sta., Omura, Nagasaki 856-01, Japan.

SO: Annals-of-the-Phytopathological-Society-of-Japan. 1983, 49: 5, 676-682; 3 fig., 3 tab.; 19 ref.

PY: 1983

LA: Japanese

LS: English

AB: Crude extracts from leaves inoculated with a cell suspension of the antagonistic *P. sp.* (A-ex) or a mixture of

P. sp. + *X. campestris* pv. *citri* (AX-ex) strongly inhibited growth of the pathogen, whereas crude extract from leaves inoculated with *X. campestris* pv. *citri* alone (X-ex) showed only very slight inhibition. Several fractions of A-ex obtained by TLC on a silica gel plate markedly inhibited the growth of *X. campestris* pv. *citri*. Two inhibitory substances were extracted by TLC and were present in high concn in A-ex and AX-ex but only in low concn in X-ex. The substances showed higher antibacterial activity against *P. sp.* than against *X. campestris* pv. *citri* and might be phytoalexins. They are considered to play important roles in the mechanisms of inhibition of citrus canker development.

DE: induced-resistance; phytoalexins-; interactions-; antagonists-; hosts-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Pseudomonas*-; bacteria-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*

CC: FF600; HH100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control

PT: Journal-article

IS: 0031-9473

UD: 951216

AN: 841300342

Record 174 of 298 - CABPESTCD 1973-1988

TI: Agglutination of *Xanthomonas campestris* pv. *citri*, a causal pathogen of citrus canker, by proteinaceous components from citrus leaves.

AU: Takahashi-T; Doke-N

AD: Fac. Agric., Nagoya Univ., Nagoya 464, Japan.

SO: Annals-of-the-Phytopathological-Society-of-Japan. 1983, 49: 5, 600-609; 1 pl. (9 fig.), 4 tab.; 17 ref.

PY: 1983

LA: English

LS: Japanese

AB: Proteinaceous components which agglutinated unwashed bacterial cells of the pathogen and its extracellular polysaccharides (EPS), but not washed cells and unwashed EPS-nonproducing mutant cells, were isolated from leaves of Citrus unshiu, C. natsudaikai and C. reticulata, forming fibrous material. The agglutinin was prepared by extraction with HCl-acidic water (pH 4) from leaf homogenate followed by precipitation with 50% saturated ammonium sulphate. It was heat and protease labile, insensitive to various salts except at high concn and inhibited at pH more than 6. Similar agglutination of unwashed cells and EPS of other xanthomonads but not those of *Pseudomonas* and *Erwinia* was also demonstrated. Of 18 sugars tested, only D-glucosamine showed a potential activity to inhibit the agglutination of *X. campestris* pv. *citri*, but not that of other xanthomonads.

DE: agglutination-; Clementines-; fruit-crops; plant-pathogenic-bacteria; plant-pathology; satsumas-; natsudaikais-

OD: Citrus-unshiu; *Xanthomonas-campestris*-pv.-*citri*; Citrus-natsudaikai; citrus-; bacteria-; Citrus-clementina

BT: bacteria; prokaryotes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-9473

UD: 951216

AN: 841300332

Record 175 of 298 - CABPESTCD 1973-1988

TI: Problems of citrus diseases in India.

AU: Singh-SP; Reddy-GS; Chand-JN; Pal-V; Ghosh-SK; Mitra-GC; Bhagbati-KN; Mukhopadhyay-S; Trivedi-N; Balaraman-K; Muniyappa-V; Raychaudhuri-SP (ed.); Ahlawat-YS

SO: 1982, ix + 136 pp.

PB: Surabhi Printers and Publishers; New Delhi; India

PY: 1982

LA: English

AB: The following chapters are included in this publication: Singh, B.P. History of citrus diseases in India and recent developments for improving citrus industry (1-11). Reddy, G.S. Status of tristeza and other diseases in citrus decline in India (12-20). Chand, J.M.; Pal, V. Citrus canker in India and its management (21-36). [Xanthomonas campestris pv. citri] Ghosh, S.K. Citrus greening under field conditions for detection of plant diseases (37-43). Mitra, G.C. Tissue culture of citrus for producing clonal virus-free plant (44-59). Ahlawat, Y.S.; Raychaudhuri, S.P. Virus and mycoplasma diseases of citrus in India (60-75). Bhagbati, K.N. Status of various virus diseases of citrus in eastern region of India (86-88). Mukhopadhyay, S.; Trivedi, N. Problems of citrus cultivation in West Bengal (89-93). Balaraman, K.; Muniyappa, V. Citrus diseases in south India (94-108). Ghosh, S.P. Citrus management in India (109-134).

DE: diseases-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathology

OD: citrus-

GE: India-

ID: Raychaudhuri

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia

CC: FF600; FF000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plants-of-Economic-Importance-General

PT: Book

AV: Rs 75, \$ 20, ú10

UD: 951216

AN: 841399461

Record 176 of 298 - CABPESTCD 1973-1988

TI: Interactions in vitro and in vivo between Xanthomonas campestris pv. citri and antagonistic Pseudomonas sp.

AU: Ota-T

AD: Nagasaki Fruit Tree Exp. Sta., Omura, Japan.

SO: Annals-of-the-Phytopathological-Society-of-Japan. 1983, 49: 3, 308-315; 3 fig., 1 tab.; 16 ref.

PY: 1983

LA: Japanese

LS: English

AB: P. sp. isolated from citrus canker lesions inhibited multiplication of the canker pathogen (X. campestris pv. citri) in PS medium and in citrus leaf tissues. In culture, the lower the conc. of the medium the less inhibition occurred, suggesting that suppression by the antagonist was not caused by competition for nutrients. Multiplication of the antagonist was not suppressed by the citrus canker bacterium in PS medium and was even slightly promoted in diluted medium. In citrus leaf tissue inoculated with both bacteria simultaneously by needle pricking the antagonist suppressed growth of X. campestris pv. citri considerably. The suppression was less noticeable when both bacteria were infiltrated into the intercellular spaces. Numbers of the antagonist introduced alone by either method increased for a few days and then gradually decreased. With mixed inoculation, multiplication of the P. sp. was enhanced and its longevity increased as compared with that in single inoculations.

DE: interactions-; antagonists-; antagonism-; hosts-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; Xanthomonas-campestris-pv.-citri; Pseudomonas-; bacteria-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes

CC: FF600; HH100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control

PT: Journal-article

IS: 0031-9473

UD: 951216

AN: 841398173

Record 177 of 298 - CABPESTCD 1973-1988

TI: Progress of citrus canker on some species and combinations in Argentina.

AU: Danos-E; Bonazzola-R; Berger-RD; Stall-RE; Miller-JW

AD: Junta Provincial de la Citricultura, Concordia, Entre Rios, Argentina.

SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1981, publ. 1982, 94: 15-18; 16 ref.

PY: 1981

LA: English

AB: The spread of *Xanthomonas campestris* was determined by recording the incidence of disease on trees of several citrus species and varieties in groves in Corrientes and Entre Rios provinces of Argentina. In the Corrientes grove, disease spread (k) was faster on Navel orange (k = 0.18) than on Satsuma mandarin (k = 0.1) or on Comun [Common] mandarin (k = 0.06). In the Entre Rios grove disease spread in Ellendale tangors was slow (k = 0.04) and in four plots of Valencia Late orange k ranged from 0.04 to 0.24.

DE: spread-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Bacteria-; Citrus-; *Xanthomonas*-; *Xanthomonas-campestris*-pv.-citri

GE: Argentina-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Pseudomonadaceae; Gracilicutes; *Xanthomonas-campestris*; *Xanthomonas*; South-America; America

CC: FF020; FF600; HH600

CD: Plant-Breeding-and-Genetics; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity

PT: Journal-article

IS: 0886-7283

UD: 951116

AN: 831621350

Record 178 of 298 - CABPESTCD 1973-1988

TI: Bacterial citrus canker occurring in the export zone.

OT: Cancro citrico na zona de exportacao.

SO: Dirigente-Rural. 1980, 19: 1-2, 42-43; fig.

PY: 1980

LA: Portuguese

AB: Despite eradication measures the disease caused by *Xanthomonas* [campestris pv.] citri has invaded the export fruit zones of Monte Alto and Candido Rodrigues. The various eradication and quarantine methods in the regions are reviewed. Epidemiology of the disease in Brazil is discussed. Chemical control is inefficient and breeding for resistance difficult.

DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Brazil-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

CI: Abstracts on Tropical Agriculture 8, 40802.

UD: 951116

AN: 831388976

Record 179 of 298 - CABPESTCD 1973-1988

TI: Citrus canker: selection and efficiency of agricultural protective measures in a preliminary field trial.

OT: Cancro citrico: selecao e eficiencia de defensivos agricolas em ensaio preliminar de campo.

AU: Pereira-ALG; Campacci-CA; Oliveira-DA

AD: Inst. Biol., Sao Paulo, Brazil.

SO: Biologico. 1981, 47: 10, 267-287; 4 fig., 7 tab.; 20 ref.

PY: 1981

LA: Portuguese

LS: English

AB: Leaves of susceptible orange seedlings were inoculated with *Xanthomonas* [campestris pv.] citri and the plants were treated 7 months later at 15-day intervals with various antibiotics and fungicides. The best results were

obtained with streptomycin sulphate + dihydrostreptomycin at 2000 g/ha and Agrimycin 100 + 50% copper oxychloride (1500 + 1500 g/ha), incidence being 12-32%, compared with 90% in the untreated control.
DE: oranges-; control-; dihydrostreptomycin-; copper-oxychloride; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: Brazil-
ID: streptomycin-sulphate; agrimycin-100
RN: 128-46-1; 1332-40-7
BT: copper-fungicides; fungicides; pesticides; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0366-0567
UD: 951116
AN: 831388182

Record 180 of 298 - CABPESTCD 1973-1988

TI: Identification of citrus canker.
OT: Identificacao do cancro citrico.
AU: Rossetti-V
AD: Inst. Biol., Sao Paulo, Brazil.
SO: Biologico. 1981, 47: 5, 145-153; 4 col. pl., 1 tab.; 4 ref.
PY: 1981
LA: Portuguese
LS: English
AB: Symptoms induced by Xanthomonas [campestris pv.] citri on leaves, fruits and branches are compared with those of other diseases.
DE: symptoms-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0366-0567
UD: 951116
AN: 831388181

Record 181 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker disease (Xanthomonas campestris pv. citri). VII. Effectiveness of control and phytotoxicity of combined applications and short-interval alternating applications of Bordeaux mixture and inorganic copper with oil emulsifiable concentrate or with mancozeb wettable powder.
AU: Serizawa-S; Inoue-K
AD: Shimizu-shi, Shizuoka-ken, Japan.
SO: Bulletin-of-the-Shizuoka-Prefectural-Citrus-Experiment-Station. 1982, No.18, 73-83; 6 ref.
PY: 1982
LA: Japanese
LS: English
AB: Combined applications of an oil emulsifiable concentrate with either Bordeaux mixture as 2:2:1 + 2:6:1 formulations or an inorganic Cu formulation containing Cu(OH)₂ + CaCO₃ markedly reduced effectiveness of citrus canker control on natsudaidai and satsuma trees, compared with application of either Cu fungicide alone.

Alternating sprays, at 3-day intervals, of oil emulsifiable concentrate and the inorganic Cu formulation were less effective than Bordeaux mixture or inorganic Cu formulation alone, although canker incidence was far lower than on untreated controls. Copper phytotoxicity symptoms were not observed with combined applications or alternating applications. Canker control was effective using the Bordeaux mixture formulations combined with a 1/500 formulation of mancozeb wettable powder, but phytotoxicity symptoms were apparent. When mancozeb was combined with the inorganic Cu formulation, control was less effective but there was no phytotoxicity.

DE: Mancozeb-; Calcium-carbonate; natsudaids-; satsumas-; diseases-; bactericides-; Bordeaux-mixture; injuries-; subtropical-fruits; citrus-fruits; fruit-crops

OD: Xanthomonas-campestris-pv.-citri; Citrus-; Citrus-natsudaids; Citrus-unshiu

GE: Japan-

ID: Cupric-hydroxide

RN: 8018-01-7; 471-34-1; 8011-63-0

BT: dithiocarbamate-fungicides; carbamate-pesticides; pesticides; fungicides; copper-fungicides; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; East-Asia; Asia

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0488-6828

UD: 951116

AN: 830312434

Record 182 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker disease (*Xanthomonas campestris* pv. *citri*). VI. Phytotoxicities of Bordeaux mixture and inorganic copper.

AU: Serizawa-S; Inoue-K

AD: Shimizu-shi, Shizuoka-ken, Japan.

SO: Bulletin-of-the-Shizuoka-Prefectural-Citrus-Experiment-Station. 1982, No.18, 49-72; 37 ref.

PY: 1982

LA: Japanese

LS: English

AB: Inorganic Cu formulations [see the preceding abstract] did not prove phytotoxic to young leaves of natsudaids and satsumas. The incidence of spray damage symptoms (star melanose of fruits and deformation and necrosis of young leaves) is discussed in relation to different formulations of Bordeaux mixture. Leaf Cu contents increased after applications of Bordeaux mixture, rising to a maximum of 52.4 p.p.m.

DE: COPPER-SULFATE; natsudaids-; satsumas-; diseases-; bactericides-; Bordeaux-mixture; injuries-; subtropical-fruits; citrus-fruits; fruit-crops

OD: Xanthomonas-campestris-pv.-citri; Citrus-; Citrus-natsudaids; Citrus-unshiu

GE: Japan-

ID: Cupric-hydroxide

RN: 7758-98-7; 8011-63-0

BT: pesticides; copper-fungicides; fungicides; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; East-Asia; Asia

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0488-6828

UD: 951116

AN: 830312433

Record 183 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker disease (*Xanthomonas campestris* pv. *citri*). V. The influence of the application interval of Bordeaux mixture and of inorganic copper on control.

AU: Serizawa-S; Inoue-K
 AD: Shimizu-shi, Shizuoka-ken, Japan.
 SO: Bulletin-of-the-Shizuoka-Prefectural-Citrus-Experiment-Station. 1982, No.18, 37-48; 8 ref.
 PY: 1982
 LA: Japanese
 LS: English
 AB: In trials with the natsudaikai cv. Kawano and the satsuma cv. Sugiyama, the effects were compared of several bactericides applied 3-5 times either when the accumulated rainfall amounted to 250-300 mm, or at intervals of 30-40 days. Bordeaux mixture 2:2:1 was as effective as a 2:6:1 formulation, and its efficacy was not affected by delaying its application for 2 days after mixing. Several inorganic Cu formulations, comprising 54% Cu (as Cu(OH)₂) and 32% Cu (as basic copper sulphate) were also compared with 95% CaCO₃, either alone or in various mixtures. The Cu(OH)₂ formulation at 1/2000 alone gave the best results. [For part IV see HcA 49, 5331.]
 DE: Bordeaux-mixture; COPPER-SULFATE; natsudaikais-; satsumas-; diseases-; subtropical-fruits; citrus-fruits; fruit-crops
 OD: Xanthomonas-campestris-pv.-citri; Citrus-natsudaikai; Citrus-unshiu
 GE: Japan-
 ID: Cupric-hydroxide
 RN: 8011-63-0; 7758-98-7
 BT: copper-fungicides; fungicides; pesticides; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia; Asia
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Journal-article
 IS: 0488-6828
 UD: 951116
 AN: 830312432

Record 184 of 298 - CABPESTCD 1973-1988

TI: A new in vitro inoculation method for citrus canker diagnosis.
 OT: [Xanthomonas campestris pv. citri].
 AU: Lopez-MM; Navarro-L; Lozano-JC
 AD: Inst. Nacional Inv. Agrarias, Moncada, Valencia, Spain.
 SO: Proceedings of the Fifth International Conference on Plant Pathogenic Bacteria. 1982, 584-591; 4 fig.; 11 ref.
 PB: Centro Internacional de Agricultura Tropical; Cali; Colombia
 PY: 1982
 LA: English
 DE: techniques-; plant-pathogenic-bacteria; fruit-crops; plant-pathology
 OD: Xanthomonas-campestris-pv.-citri; citrus-; bacteria-
 ID: diagnosing; Xanthomonas-campestris-pv.-citri-on-citrus
 BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants
 CC: FF600; ZZ900
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology
 PT: Conference-paper
 UD: 951116
 AN: 821385915

Record 185 of 298 - CABPESTCD 1973-1988

TI: Pathogenicity of three strains of citrus canker organism on grapefruit.
 AU: Stall-RE; Miller-JW; Marco-GM; Canteros-de-Echenique-BI; Lozano-JC
 AD: Univ. Florida, Gainesville, USA.
 SO: Proceedings of the Fifth International Conference on Plant Pathogenic Bacteria. 1982, 334-340; 1 fig., 1 tab.; 17 ref.

PB: Centro Internacional de Agricultura Tropical; Cali; Colombia
PY: 1982
LA: English
AB: Str. A of *Xanthomonas campestris* pv. *citri* was the most aggressive. B was more difficult to isolate. C caused a hypersensitive reaction on the leaves, but no lesions.
DE: grapefruits-; plant-pathogenic-bacteria; fruit-crops; plant-pathology
OD: *Xanthomonas-campestris*-pv.-*citri*; citrus-; bacteria-; *Citrus-paradisi*
ID: pathogenicity-of-strs
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Citrus*
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Conference-paper
UD: 951116
AN: 821385886

Record 186 of 298 - CABPESTCD 1973-1988

TI: Growth inhibition of *Xanthomonas campestris* pv. *citri* and its reversal by amino acids found in the intercellular fluids of citrus leaves.
AU: Goto-M; Yamanaka-K
AD: Shizuoka Univ., Ohya, Japan.
SO: *Annals-of-the-Phytopathological-Society-of-Japan*. 1981, 47: 5, 618-626; 10 fig.; 8 ref.
PY: 1981
LA: English
LS: Japanese
AB: Twenty one amino acids were identified from healthy citrus leaves and quantitative analyses made of the changes in their concs. following inoculation with the citrus canker bacterium. The amino acids present in significant amounts were tested for their role in bacterial growth. Methionine was essential for growth of *X. campestris* pv. *citri* and the opt. conc. was 0.05-0.1 μ mol/ml, i.e. the amount detected in leaves. In the presence of methionine, several amino acids such as asparagine, glutamine, leucine and proline were utilized. Proline was the major amino acid found in leaves and its conc. was 10 times that in healthy leaves several days after inoculation. Serine and hydroxylysine were inhibitory to the bacterium but this activity was prevented by the presence of methionine and proline, at concs. equivalent to those in leaves. Sensitivity to serine and hydroxylysine was higher in a virulent isolate than in an avirulent one. The activity of proline was synergistically increased by alanine, although the latter alone did not have such an effect. The conc. of proline in the leaves of the resistant *Fortunella japonica* (kumquat) was lower than that in susceptible *Citrus natsudaoidai*, but the reverse was observed with serine. The higher ratio of serine: proline may be a factor in the high resistance of *F. japonica*.
DE: kumquats-; amino-acids; effects-; fruit-crops; plant-pathogenic-bacteria; plant-pathology; *natsudaoidais*-
OD: citrus-; *Citrus-natsudaoidai*; *Xanthomonas-campestris*-pv.-*citri*; bacteria-; *Fortunella*-
BT: bacteria; prokaryotes; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Citrus*; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-9473
UD: 951116
AN: 821384290

Record 187 of 298 - CABPESTCD 1973-1988

TI: Experimental tests with insects involving the dissemination of the bacterium *Xanthomonas citri* (Hasse) Dowson.
OT: Comprobaciones experimentales con insectos en la diseminacion de la bacteria *Xanthomonas citri* (Hasse) Dowson.
AU: Rosillo-MA; Rivera-Flores-S; Coll-O-del-R-de; Flores-S-Rivera; De-Coll-O-del-R

AD: Estacion Experimental Agropecuaria de Cerro Azul, INTA, Misiones, Argentina.
SO: Idia. 1978, publ. 1980, recd. 1981, Nos. 361-366, 100-118; 17 fig.; 26 ref.
PY: 1978
LA: Spanish
AB: Some 56 species of arthropods were tested in the field in Argentina for their ability to act as disseminators of *Xanthomonas citri*, the causative agent of citrus canker, which occurs in north-eastern Argentina. Details are given of the methods adopted for the tests and of the results obtained; these showed that 25 species belonging to 7 orders (Coleoptera, Hemiptera, Homoptera, Thysanoptera, Hymenoptera, Neuroptera and Diptera) were capable of disseminating the bacterium. The species tested included pests of citrus, predators of those pests, species commonly present in citrus groves and species found on weeds carrying *Xanthomonas*.
DE: vectors-; plant-diseases; agricultural-entomology
OD: Citrus-; arthropods-
ID: Schizomycetes; *Xanthomonas-citri*; insect-transmission
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; invertebrates; animals; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0018-9081
UD: 951116
AN: 810589164

Record 188 of 298 - CABPESTCD 1973-1988

TI: Control of citrus canker on acid lime.
AU: Balaraman-K; Purusotman-R
AD: Indian Institute of Horticultural Research, Bangalore-560 080, India.
SO: South-Indian-Horticulture. 1981, 29: 4, 175-177; 6 ref.
PY: 1981
LA: English
AB: Three-year-old acid lime (*Citrus aurantifolia*) trees were treated with different chemicals 6 times between mid-February and mid-July. Treatment with streptomycin sulphate or oxytetracycline, each at 1000 p.p.m., gave the best and next best, respectively, control of *Xanthomonas [campestris pv.] citri*.
ADDITIONAL ABSTRACT: In tests with streptomycin, Poushamycin (streptomycin + oxytetracycline), oxytetracycline, Bordeaux and copper oxychloride, against *Xanthomonas [campestris pv.] citri* the streptomycin spray resulted in a 22% yield increase over the control.
DE: Streptomycin-; Oxytetracycline-; limes-; diseases-; control-; Bordeaux-mixture; copper-oxychloride; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris-pv.-citri*; citrus-; bacteria-
GE: India-
ID: poushamycin
RN: 57-92-1; 79-57-2; 8011-63-0; 1332-40-7
BT: copper-fungicides; fungicides; pesticides; bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0038-3473
UD: 951116
AN: 820306619

Record 189 of 298 - CABPESTCD 1973-1988

TI: A comparative study of the strains of *Xanthomonas campestris* pv. *citri* isolated from citrus canker in Japan and cancrasis B in Argentina.

AU: Goto-M; Takahashi-T; Messina-MA
AD: Shizuoka Univ., Ohya, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1980, 46: 3, 329-338; 2 fig., 6 tab.; 19 ref.
PY: 1980
LA: English
LS: Japanese
AB: Strs. of the canker B organism were significantly less virulent than those of canker A from Japan when tested on various citrus spp. including Unshu, Natsudaikai, lemon and navel orange. B str. formed smaller colonies on agar plates, had a delayed lag period in liquid media, did not use lactose and maltose, were susceptible to the new phage Cp3 and lacked an antigenic component of the latter. Ten of 21 B str. did not use malonate which was consistently used by the A str. All B isolates used mannitol while half the A isolates did not use it. It was concluded that such differences were sufficient to maintain the B organism as a distinct group within *X. campestris* pv. *citri*.
DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Argentina-; Japan-
ID: differentiation-of-strs
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America; East-Asia; Asia
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-9473
UD: 951216
AN: 811371229

Record 190 of 298 - CABPESTCD 1973-1988

TI: Relationship between defoliation and disease severity in citrus canker.
AU: Goto-M; Yaguchi-Y
AD: Shizuoka Univ., Ohya, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1979, 45: 5, 689-694; 5 fig., 1 tab.; 6 ref.
PY: 1979
LA: English
LS: Japanese
AB: After young shoots of *Citrus natsudaikai* were spray inoculated with *Xanthomonas citri* in the field defoliation was >80% when 10% of leaf surface area was covered by lesions and 100% when >20% of the surface was covered. These figures corresponded approx. to 1 large lesion (4.5 mm diam.)/cm² leaf or 15-20 lesions/mature leaf. Most of the leaves with lesions covering <5% of the surface remained attached throughout the season. When leaves of young seedlings were inoculated in the glasshouse by the leaf infiltration method, abscission was directly related to the surface area with lesions. Most of the fallen leaves had 20% of the area covered, a significantly larger amount than that observed after spray inoculation in the field. The rate of abscission increased when the site of inoculation was in the lower half of the leaf.
DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology; natsudaikais-
OD: *Citrus-natsudaikai*; bacteria-
ID: *Xanthomonas-citri*; Japan,-defoliation
BT: bacteria; prokaryotes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-9473
UD: 951216
AN: 801365237

Record 191 of 298 - CABPESTCD 1973-1988

TI: Variability in *Xanthomonas citri*, the incitant of citrus canker.

AU: Prasad-MVR; Moses-GJ; Reddy-GS

AD: SV Agric. Coll., Tirupati, Andhra Pradesh, India.

SO: Indian-Phytopathology. 1978, publ. 1979, 31: 2, 227-229; 1 tab.; 5 ref.

PY: 1978

LA: English

AB: The reactions of 30 members of the Rutaceae (mainly *Citrus* spp.) to 19 *X. citri* isolates are described. Many were not infected and of the others, 9 were selected as differentials.

ADDITIONAL ABSTRACT: The results are presented of inoculation tests with 19 isolates of *X. citri* on 30 spp. and cvs. in the Rutaceae.

DE: varietal-reactions; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

ID: *Xanthomonas-citri*; variability-of-isolates

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0367-973X

UD: 951116

AN: 801367352

Record 192 of 298 - CABPESTCD 1973-1988

TI: Relation to temperature to the development of citrus canker lesions in the spring.

AU: Koizumi-M; Grierson-W

AD: Fruit Tree Res. Sta., Kuchinotsu, Nagasaki, Japan.

SO: 1977 International Citrus Congress, Florida. Proceedings-of-the-International-Society-of-Citriculture. 1979, 3: 924-928; 3 fig., 2 tab.; 13 ref.

PY: 1979

LA: English

AB: When *X. citri* (in Japan) invaded host tissues in autumn and infected them before the av. daily max. temp. for 10 days dropped to 13 deg C or lower, many latent bacteria overwintered, and lesions developed next spring. If infection did not occur within 1 month of invasion, the bacteria died off during the winter. After Feb. or Mar. bacteria easily invaded host tissues through the stomata and through wounds, and abundant lesions appeared in Apr. In early spring bacteria dispersed from diseased trees via rain water. Thus natural infection occurred on overwintered shoots. These lesions provided the most important inoculum source for newly developing shoots, particularly in a warm spring. Bordeaux (applied in mid-Mar.) was effective in controlling the disease during the growing season.

DE: Fungicides-; control-; Bordeaux-mixture; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

GE: Japan-

ID: *Xanthomonas-citri*; Japan,-effect-of-temp

RN: 8011-63-0

BT: pesticides; copper-fungicides; fungicides; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

UD: 951116

AN: 801362774

Record 193 of 298 - CABPESTCD 1973-1988

TI: Citrus canker in Latin America: a review.
 AU: Rossetti-V; Grierson-W
 AD: Inst. Biol., Sao Paulo, Brazil.
 SO: 1977 International Citrus Congress, Florida. Proceedings-of-the-International-Society-of-Citriculture. 1979, 3: 918-924; 55 ref.
 PY: 1979
 LA: English
 AB: The situation of *Xanthomonas citri* in Argentina, Brazil, Paraguay and Uruguay is briefly reviewed.
 DE: reviews-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
 OD: citrus-; bacteria-
 GE: South-America
 ID: *Xanthomonas-citri*; Latin-America,-review; *Xanthomonas-citri*-in-Latin-America
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; America; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Journal-article
 UD: 951116
 AN: 801362773

Record 194 of 298 - CABPESTCD 1973-1988

TI: Serological methods employed in the study of citrus canker in Argentina. 2. First experimental evidence of the means of ecological spread.
 OT: Los metodos serologicos en el estudio de la bacteria que produce la "cancrosis citrica" en la Argentina. 2. Primera comprobacion experimental del medio de distribucion ecologia.
 AU: Messina-MA
 AD: Instituto Nacional de Tecnologia Agropecuaria, Entre Rios, Argentina.
 SO: Serie-Tecnica -Estacion-Experimental-Regional-Agropecuaria-Parana. 1977, No. 48, 11 pp.; pl.; 12 ref.
 PY: 1977
 LA: Spanish
 LS: English
 AB: The causal agent, *Xanthomonas citri*, was shown to be transmitted from diseased to healthy trees via the hands of fruit pickers or on pruning shears.
 DE: spread-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
 OD: citrus-; bacteria-
 GE: Argentina-
 ID: *Xanthomonas-citri*
 BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-America; America; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Miscellaneous
 CI: Abstracts on Tropical Agriculture 5, 26656.
 UD: 951116
 AN: 801361991

Record 195 of 298 - CABPESTCD 1973-1988

TI: Characterization of a new filamentous phage Cf from *Xanthomonas citri*.
 AU: Dai-H; Chiang-K-S; Kuo-T-T
 AD: Inst. Bot., Taipei, Taiwan.
 SO: Journal-of-General-Virology. 1980, 46: 2, 277-289; 7 fig., 2 tab.; 15 ref.
 PY: 1980
 LA: English
 AB: The phage (10 075 plus or minus 985 X 10-1nm, Cf) was isolated from the causal agent of citrus canker. An

unusually clear but tiny plaque was formed on the host within 12 h after inoculation. Infection by Cf neither killed nor drastically prevented host cells from propagation, but the rate of cell division was severely retarded. This phage exhibited an exceedingly narrow host range and was unstable in conventional tris buffer and synthetic medium used for the preparation of other filamentous phages. Based on nucleotide composition analysis (which also revealed that Cf contains an unusual nucleotide), thermal denaturation characteristics and the hydroxyapatite column elution pattern, the genome of Cf was found to be single-stranded DNA. During phage multiplication in host cells single-stranded virus DNA, replicative form I and replicative form II were detected. As shown by acrylamide gel electrophoresis, the size and conformation of the virus, RFI and RFII DNA species, were the same as their counterparts in another filamentous phage Xf.

DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

ID: Xanthomonas-citri; filamentous-phage

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0022-1317

UD: 951116

AN: 801361793

Record 196 of 298 - CABPESTCD 1973-1988

TI: Present epidemic status and control of the citrus canker disease (*Xanthomonas citri* (Hasse) Dowson) in Japan.

AU: Kuhara-S

AD: Fruit Tree Res. Sta., Kuchinotsu, Nagasaki, Japan.

SO: Review-of-Plant-Protection-Research. 1978, 11: 132-142; 1 fig., 1 tab.; 97 ref.

PY: 1978

LA: English

AB: A review of the occurrence, control and related problems of *X. citri*.

DE: reviews-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

GE: Japan-

ID: Xanthomonas-citri; Japan,-review; Xanthomonas-citri-on-citrus-in-Japan

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia;

Asia; Xanthomonas; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951116

AN: 791354958

Record 197 of 298 - CABPESTCD 1973-1988

TI: Survival of *Xanthomonas citri* (Hasse) Dowson, causal agent of citrus canker in the rhizosphere of *Panicum maximum* Jacq.

OT: A sobrevivencia de *Xanthomonas citri* (Hasse) Dowson, agente causal do "cancro citrico" na rizosfera de capim coloniao (*Panicum maximum* Jacq.).

AU: Pereira-ALG; Watanabe-K; Zavgatto-AG; Cianiulli-PL

AD: Instituto Biologico, Sao Paulo, Brazil.

SO: Biologico. 1978, 44: 6, 135-138; 1 fig.; 10 ref.

PY: 1978

LA: Portuguese

LS: English

AB: *X. citri* was isolated from the roots and rhizosphere of *P. maximum* on sites where infected citrus trees had been destroyed. No symptoms were found on the plants, suggesting that survival of the bacteria may be due to root

exudates.

DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Panicum-maximum; citrus-; bacteria-

GE: Brazil-

ID: Xanthomonas-citri; survival-in-rhizosphere; Panicum-maximum-rhizosphere; Brazil,-survival

BT: bacteria; prokaryotes; Panicum; Poaceae; Cyperales; monocotyledons; angiosperms; Spermatophyta; plants;

Rutaceae; Sapindales; dicotyledons; South-America; America; Xanthomonas; Pseudomonadaceae; Gracilicutes;

Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0366-0567

UD: 951116

AN: 791353185

Record 198 of 298 - CABPESTCD 1973-1988

TI: Thiram, a fungicide effective against Xanthomonas citri (Hasse) Dowson.

AU: Beniwal-SPS; Chaubey-SN

AD: GB Pant Univ. Agric. Technol, Pantnagar, Nainital, Uttar Pradesh, India.

SO: Pesticides. 1976, 10: 9, 31,36; 2 tab.; 6 ref.

PY: 1976

LA: English

AB: Of the antibiotics and fungicides tested against X. citri, thiram was the most effective at checking growth at up to 500 p.p.m. At higher concs. thiram was as effective as streptomycin sulphate, streptocycline and Agrimycin [Streptomycin]. Thiram activity was reduced when tested in combination with any of these antibiotics. Tests showed that thiram persisted on Eureka lemon 15 days after spraying. The results indicate that thiram may be useful in controlling citrus canker.

DE: lemons-; control-; thiram-; streptomycin-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

GE: India-

ID: Xanthomonas-citri; streptomycin-sulphate; streptocycline; agrimycin

RN: 137-26-8; 57-92-1

BT: dithiocarbamate-fungicides; carbamate-pesticides; pesticides; fungicides; bacteria; prokaryotes; Rutaceae;

Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia; Xanthomonas;

Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

UD: 951116

AN: 791352042

Record 199 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker. IV. Influences of rainfall on the residual effectiveness of Bordeaux mixture and inorganic copper.

AU: Serizawa-S; Inoue-K

AD: Shizuoka Prefectural Citrus Experiment Station, Komagoe, Shimizu-City, Japan.

SO: Bulletin-of-the-Shizuoka-Prefectural-Citrus-Experiment-Station. 1978, No. 14, 13-28; 2 pl.; 20 ref.

PY: 1978

LA: Japanese

LS: English

AB: When Bordeaux mixture was sprayed on Citrus natsudaidai the amount of rainfall and the number of days after application that rain fell influenced the duration of effectiveness. The formation of water-soluble Cu rapidly increased after 30-40 days, so rainfall after this period greatly reduced the effectiveness of the spray. The bactericidal activity against Xanthomonas citri of 2-6-1 Bordeaux mixture was slightly weaker than that of the 2-2-1

mixture but the residual effectiveness was longer. The Cu concentration within the leaves was not correlated with the control. When calcium carbonate was added to the wettable powder of cupric hydroxide the bactericidal effect was less than when cupric hydroxide was used alone but the residual effectiveness was longer.

DE: Bordeaux-mixture; natsudaids-; diseases-; fungicides-; persistence-; control-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-; Citrus-natsudaids

GE: Japan-

ID: Xanthomonas-citri; Cupric-hydroxide

RN: 8011-63-0

BT: copper-fungicides; fungicides; pesticides; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; East-Asia; Asia; Xanthomonas; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

IS: 0488-6828

UD: 951116

AN: 790371846

Record 200 of 298 - CABPESTCD 1973-1988

TI: Citrus canker control with fungicides and antibiotics.

AU: Ganesh-Singh; Yadava-HR

AD: U.P. College, Varanasi, India.

SO: PANS. 1978, 24: 4, 341.

PY: 1978

LA: English

AB: In 2-year trials on the control of Xanthomonas citri on citrus trees, several fungicides and antibiotics were sprayed at 15-day intervals, starting in early July after pruning the old affected leaves and twigs and before the appearance of the disease. Almost complete control was obtained with copper oxychloride (0.3%), mancozeb (0.2%) and streptomycin + oxytetracycline (0.005%). Yields were greatly enhanced and fruit drop reduced by the first 2 fungicides. The incidence of fruit cracking was also reduced by captan.

DE: Copper-oxychloride; Mancozeb-; Streptomycin-; Oxytetracycline-; Captan-; diseases-; fruit-; drop-; fungicides-; subtropical-fruits; citrus-fruits; fruit-crops

OD: citrus-

GE: India-

ID: Xanthomonas-citri; fruit-drop

RN: 1332-40-7; 8018-01-7; 57-92-1; 79-57-2; 133-06-2

BT: copper-fungicides; fungicides; pesticides; dithiocarbamate-fungicides; carbamate-pesticides; dicarboximide-fungicides; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951116

AN: 780368320

Record 201 of 298 - CABPESTCD 1973-1988

TI: Incidence of citrus canker on field grown nucellar and budded citrus plants.

AU: Cheema-SS; Kapur-SP; Dhillon-RS; Anand-S

AD: Punjab Agric. Univ., Ludhiana, India.

SO: Indian-Phytopathology. 1975, publ. 1976, 28: 3, 441-442; 1 ref.

PY: 1975

LA: English

AB: The nucellar cvs. were highly susceptible to Xanthomonas citri while old line sweet orange cvs. budded on

rough lemon were free from infection. Marsh Seedless grapefruit showed mild infection. Rootstocks do not appear to impart scion resistance to *X. citri* and the vigorous growth of nucellar cvs. may make them more susceptible.

DE: oranges-; grapefruits-; rootstocks-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-; Citrus-paradisi

GE: India-

ID: *Xanthomonas-citri*

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; South-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0367-973X

UD: 951116

AN: 771332847

Record 202 of 298 - CABPESTCD 1973-1988

TI: Changes in the free amino acids of citrus leaves in relation to citrus greening and citrus canker.

AU: Singh-KP; Kaleem-M; Edward-JC

AD: Allahabad Agricultural Institute, Allahabad, India.

SO: Current-Science. 1976, 45: 13, 502-503; 1 ref.

PY: 1976

LA: English

AB: Data are presented on the amino acid composition of citrus leaves affected by greening virus disease or by bacterial canker [*Xanthomonas citri*], compared with that of healthy leaves. Diseased leaves usually had lower amino acid contents than healthy leaves.

DE: diseases-; greening-; amino-acids; composition-; leaves-; subtropical-fruits; citrus-fruits; fruit-crops

OD: citrus-

ID: *Xanthomonas-citri*

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF040

CD: Plant-Composition

PT: Journal-article

IS: 0011-3891

UD: 951116

AN: 770349169

Record 203 of 298 - CABPESTCD 1973-1988

TI: Citrus canker, a threat to Brazilian citrus culture.

OT: Cancro citrico-ameaca a citricultura brasileira.

AU: Moreira-S

SO: Revista-de-Agricultura,-Piracicaba,-Brazil. 1975, 50: 1-2, 79-84.

PY: 1975

LA: Portuguese

AB: Symptoms of *Xanthomonas citri* are briefly described, the world distribution of the disease and the present state of the drive against it in Sao Paulo State are discussed, and legislative and fiscal measures necessary for eradicating it from Brazil are outlined.

DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; bacteria-

GE: Brazil-

ID: *Xanthomonas-citri*

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-America; America; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
UD: 951116
AN: 761327879

Record 204 of 298 - CABPESTCD 1973-1988

TI: Resistance of citrus to citrus canker caused by *Xanthomonas citri* - analysis of phenols and sugars.
AU: Kishore-V; Chand-JN
SO: Indian-Phytopathology. 1975, publ. 1976, 28: 1, 46-47; 1 tab.
PY: 1975
LA: English
AB: Total phenols were higher in the resistant *Citrus reticulata* while the highly susceptible *C. aurantifolia* contained very few phenolics. The only qualitative differences found in sugars in the 4 *C. spp.* analysed were arabinose and mannose present only in *C. aurantifolia*.
DE: oranges-; lime-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; bacteria-
ID: *Xanthomonas-citri*; enolic-and-sugar-content
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0367-973X
UD: 951116
AN: 761326759

Record 205 of 298 - CABPESTCD 1973-1988

TI: The incubation period of citrus canker in relation to temperature.
AU: Koizumi-M
AD: Okitsu, Shimizu, Shizuoka, Japan.
SO: Bulletin-of-the-Fruit-Tree-Research-Station,-B-Okitsu. 1976, No. 3, 33-46; 9 ref.
PY: 1976
LA: Japanese
LS: English
AB: The maximum and minimum temperatures for disease development after inoculation were 36-38 deg and 13 deg C, respectively. The incubation period (time from inoculation to the appearance of water-soaked spots) was the same in whole plants as in detached leaves and a mathematical expression was derived for relating this period to the temperature. An index of disease progress was also derived. No relationship between incubation period and disease resistance was observed.
DE: diseases-; temperature-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; bacteria-
ID: *Xanthomonas-citri*
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
UD: 951116
AN: 760345707

Record 206 of 298 - CABPESTCD 1973-1988

TI: Ultrastructural studies on Taiwan citrus canker disease.
AU: Hsieh-SI; Fong-JC; Lin-LP; Liu-HY

AD: Coll. Agric., Taipei, Taiwan.
SO: Chinese-Journal-of-Microbiology. 1974, 7: 4, 150-156.
PY: 1974
LA: Chinese
LS: English
AB: Xanthomonas citri invaded the host cells through the intercellular spaces. In the epidermal cells plasmolysis occurred and many organelles were degraded. The pathogen probably secretes pectin decomposing enzymes to facilitate tissue penetration.
DE: ultrastructure-; fruit-crops; plant-pathology
OD: citrus-
ID: Xanthomonas-citri
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
CI: Biological Abstracts 60, 10752.
UD: 951116
AN: 751322128

Record 207 of 298 - CABPESTCD 1973-1988

TI: Efficacy of different fungicides and antibiotics in the control of citrus canker caused by Xanthomonas citri (Hasse) Dowson.
AU: Mathar-AS; Irulappan-I; Krishnamurthy-CS; Rajappan-PV; Gowder-RB
AD: Fruit Res. Stn., Periyakulam, India.
SO: Madras-Agricultural-Journal. 1973, 60: 7, 626; 1 tab.
PY: 1973
LA: English
AB: All of 5 fungicidal and antibiotic treatments significantly reduced canker incidence on lime but 0.0025% streptocycline was best.
DE: lime-; control-; fruit-crops; plant-pathology
OD: citrus-
ID: Xanthomonas-citri; streptocycline
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0024-9602
UD: 951116
AN: 741316049

Record 208 of 298 - CABPESTCD 1973-1988

TI: Studies on drug resistance of Xanthomonas citri (Hasse) Dowson.
AU: Koizumi-M; Yamada-S-I
AD: Minist. Agric. For., Okitsu, Shimizu, Shizouka, Japan.
SO: Bulletin-of-the-Horticultural-Research-Station,-Okitsu,-B. 1972, 12: 245-256.
PY: 1972
LA: Japanese
LS: English
AB: Resistance of X. citri, the agent of citrus canker, to 2-amino-1,3,4-thiadiazole (ATDA), TF-130 (related to ATDA) and streptomycin (SM) was examined. After 1 or 2 sprays with 1000 ppm ATDA or 100 ppm TF-130, lesions formed on intact leaves of Citrus natsudaidai. Increase in the ratio of SM resistance following spraying at 200 IU/ml was less than that of the 2 other compounds. When Washington navel orange trees were sprayed

repeatedly in the field there was a remarkable increase in the ratio of resistant bacteria in lesions after 3 sprays of ATDA or TF-130 in the 1st yr. After the winter of the 1st yr the ratio did not decrease. Both ATDA and TF-130 were more effective than Bordeaux in the 1st yr but less effective in the 2nd and 3rd. No increase in the ratio of SM resistant bacteria or reduction of the effect of SM spray was observed.

DE: oranges-; control-; streptomycin-; Bordeaux-mixture; fruit-crops; plant-pathology

OD: citrus-

ID: *Xanthomonas-citri*; ATDA; TF-130

RN: 57-92-1; 8011-63-0

BT: copper-fungicides; fungicides; pesticides; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

CI: Biological Abstracts 57, 68683.

UD: 951116

AN: 741314231

Record 209 of 298 - CABPESTCD 1973-1988

TI: Studies on the symptoms of citrus canker formed on Satsuma mandarin fruit and existence of causal bacteria in the affected tissues.

OT: [*Xanthomonas citri*].

AU: Koizumi-M

AD: Minist. Agric. For., Okitsu, Shimizu, Shizuoka, Japan.

SO: Bulletin-of-the-Horticultural-Research-Station,-Okitsu,-B. 1972, 12: 229-244.

PY: 1972

LA: Japanese

LS: English

DE: fruit-crops; plant-pathology

OD: citrus-

GE: Japan-

ID: Satsuma-mandarin; *Xanthomonas-citri*

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

CI: Biological Abstracts 57, 68716.

UD: 951116

AN: 741313711

Record 210 of 298 - CABPESTCD 1973-1988

TI: Resistance of citrus to citrus canker caused by *Xanthomonas citri* (Hasse) Dowson: analysis of amino acids.

AU: Kishore-V; Chand-JN

AD: Haryana Agricultural University, Hissar, India.

SO: Haryana-Journal-of-Horticultural-Sciences. 1973, 2: 1-2, 46-49; 6 ref.

PY: 1973

LA: English

AB: Biochemical analyses of healthy leaves and leaves inoculated with *X. citri* are presented for *Citrus reticulata*, *C. sinensis*, *C. jambhiri* and *C. aurantifolia*. The most resistant sp., *C. reticulata*, contained 13 amino acids whereas *C. aurantifolia*, which is susceptible, contained 17 amino compounds. *C. aurantifolia* and *C. jambhiri* (the next most susceptible) were the only spp. that contained beta-alanine and phenylalanine. Lysine and proline were present in *C. reticulata*, but absent in *C. aurantifolia*. The amino acid content was lower in infected than in healthy leaves, regardless of the species. The decrease was most marked for glutamine, threonine, serine, glycine, asparagine and leucine.

DE: Phenylalanine-; Lysine-; Proline-; Glutamine-; Threonine-; Serine-; Glycine-; Asparagine-; mandarins-; oranges-; limes-; diseases-; resistance-; amino-acids; disease-resistance; subtropical-fruits; citrus-fruits; fruit-crops
 OD: citrus-
 ID: Xanthomonas-citri-beta-alanine; Leucine-; Xanthomonas-citri; jambhiri
 RN: 63-91-2; 56-87-1; 147-85-3; 56-85-9; 72-19-5; 56-45-1; 56-40-6; 70-47-3
 BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
 CC: FF600; HH600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity
 PT: Journal-article
 IS: 0970-2873
 UD: 951116
 AN: 750327552

Record 211 of 298 - CABPESTCD 1973-1988

TI: Role of citrus leaf-miner (*Phyllocnistis citrella* Stainton), on the prevalence and severity of citrus canker (*Xanthomonas citri* (Hasse) Dowson).
 AU: Sinha-MK; Batra-RC; Uppal-DK
 AD: Department of Biology, Allahabad Agricultural Institute, Allahabad, Uttar Pradesh, India.
 SO: Madras-Agricultural-Journal. 1972, 59: 4, 240-245; 8 ref.
 PY: 1972
 LA: English
 AB: At Abohar in the Punjab, India, in 1968, the relation between damage caused by the leaf-mining larvae of *Phyllocnistis citrella* Stnt. and the incidence of the canker caused by *Xanthomonas citri* [cf. RAE/A 56, 2321] was investigated in the field on 35 varieties of Citrus. In August-September, ten twigs profusely attacked by the Gracillariid and ten that were practically free from attack were tagged, and in November-December the number of leaves that showed mild, moderate or severe canker (up to 10%, 10-40% and over 40%, respectively, of the leaf area affected) was recorded twice. In the different varieties, 4.47-67.13% of the unmined and 19.02-85.57% of the mined leaves were cankered. In the most severely affected variety, the percentages of infected unmined leaves that were severely, moderately and mildly affected were 13.43, 25.37 and 61.20, respectively, as compared with 60.00, 29.55 and 10.45 for infected mined leaves. The pattern was similar in the other varieties. It is suggested that control of the disease (by antibodies and fungicides) would be improved if insecticides were used simultaneously against *P. citrella*.

ADDITIONAL ABSTRACT: In a survey of 35 citrus spp. and cvs the prevalence and severity of canker was greatly increased where there were injuries caused by *P. citrella*.

DE: arthropod-pests; fruits-; fruit-crops; subtropical-fruits; citrus-fruits; plant-diseases; agricultural-entomology
 OD: *Phyllocnistis citrella*; Citrus-; arthropods-
 GE: India-; Indian-Punjab
 ID: relation-of-canker; *Xanthomonas citri*; relation-of-mining-by-*Phyllocnistis citrella*; disease-complex; citrus-diseases; pest-relationships
 BT: arthropods; invertebrates; animals; pests; *Phyllocnistis*; *Phyllocnistidae*; *Lepidoptera*; insects; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia; India; *Xanthomonas*; *Pseudomonadaceae*; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Journal-article
 IS: 0024-9602
 UD: 951116
 AN: 740520641

Record 212 of 298 - CABPESTCD 1973-1988

TI: Citrus canker in Haryana.
 AU: Kishore-V; Chand-JN
 AD: Hissar, India.

SO: Haryana-Agricultural-University-Journal-of-Research. 1972, 2: 2, 124-127; 11 ref.

PY: 1972

LA: English

AB: Citrus canker (*Xanthomonas citri*) is widespread in the citrus-growing districts of Haryana. A survey in these areas showed that *Citrus aurantifolia* is the most susceptible species. In pathogenicity studies in which young seedlings of *C. aurantifolia*, *C. reticulata*, *C. sinensis* and *C. jambhiri* were inoculated with 8 *X. citri* isolates, all isolates caused typical disease symptoms, but 2 were more virulent than the others. Differences in susceptibility among the *Citrus* spp. tested were related to stomata number and size, on which data are presented.

DE: stomata-; size-; disease-resistance; lime-; oranges-; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathology

OD: citrus-

GE: India-

ID: *Xanthomonas-citri*; citrus-diseases; number

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF600; HH600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity

PT: Journal-article

IS: 0379-4008

UD: 951116

AN: 740319652

Record 213 of 298 - CABPESTCD 1973-1988

TI: Studies on citrus canker symptoms on satsuma fruit and the occurrence of the causal bacteria in the affected tissues.

AU: Koizumi-M

AD: Shimizu, Shizuoka, Japan.

SO: Bulletin-of-the-Horticultural-Research-Station,-B-Okitsu. 1972, No. 12, 229-243; 2 pl.; 14 ref.

PY: 1972

LA: Japanese

LS: English

AB: Lesions on young fruit (60% developed) inoculated before late August are described; collapsed cells were cut off by phelloderm and at harvest few bacteria (*Xanthomonas citri*) were present. Lesions on fruit inoculated in early and in late September are also described. Their development appeared to be increased by strong winds and hot weather, and they contained more bacteria at harvest.

DE: subtropical-fruits; citrus-fruits; fruit-crops

GE: Japan-

ID: *Xanthomonas-citri*; mandarin-and-tangerine-diseases

BT: East-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951116

AN: 740319383

Record 214 of 298 - CABPESTCD 1973-1988

TI: Citrus canker and its control with fungicides.

AU: Ram-G; Nirwan-RS; Saxana-ML

AD: Horticultural Research Institute, Saharanpur, India.

SO: Punjab-Horticultural-Journal. 1972, 12: 4, 240-243; 9 ref.

PY: 1972

LA: English

AB: Citrus canker (*Xanthomonas citri*) was controlled by spraying at 10-day intervals from June to September with Blitox (copper oxychloride) + Tenac, each at 0.3%, or nickel chloride at 0.15%, after removing infected leaves and

twigs. Nickel sulphate at 0.2% and sodium arsenite + copper sulphate, each at 0.1%, were also effective.
DE: Copper-oxychloride; Sodium-arsenite; COPPER-SULFATE; control-; subtropical-fruits; citrus-fruits; fruit-crops
GE: India-
ID: Xanthomonas-citri-Tenac; Nickel-chloride; Nickel-sulphate; citrus-diseases; Xanthomonas-citri
RN: 1332-40-7; 7784-46-5; 7758-98-7
BT: copper-fungicides; fungicides; pesticides; arsenical-insecticides; insecticides; South-Asia; Asia; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0033-4324
UD: 951116
AN: 730313527

Record 215 of 298 - CABPESTCD 1973-1988

TI: Comparative studies between Xanthomonas citri (Hasse) Dow., pathogen of citrus canker and Xanthomonas citri (Hasse) Dow N.F. SP. aurantifolia, pathogen of "Calego lime canker".
AU: Namekata-T
AD: Escola Superior de Agricultura "Luiz de Queiroz", Piracicaba, Brazil.
SO: Boletim-de-Divulgacao,-Escola-Superior-de-Agricultura-"Luiz-de-Queiroz",-Universidade-de-Sao-Paulo. 1971, publ. 1973, No. 18, 102-104, 242-244.
PY: 1971
LA: English, Portuguese
AB: Pathogenicity tests using 15 citrus varieties showed that while the bacterial agent of canker B produced symptoms in all the varieties, the level of attack varied. A second bacterium, the causal agent of Mexican lime canker, attacked only five varieties. It is classified by the author as X. citri f. sp. aurantifolia.
DE: fruit-crops
OD: Citrus-; Xanthomonas-
GE: Brazil-
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; South-America; America
CC: FF020; FF600; HH600
CD: Plant-Breeding-and-Genetics; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity
PT: Abstract-only
UD: 951116
AN: 731609846

Record 216 of 298 - CABPESTCD 1973-1988

TI: Dissertation abstracts 1971.
OT: Resumos de Teses 1971.
AU: Novaes-FV; Lovadini-LAC; Abreu-JM-de; Rovira-LA; Lima-VPMS
CA: Brazil, Universidade de Sao Paulo.
AD: Escola Superior de Agricultura "Luiz de Queiroz", Piracicaba, Sao Paulo.
SO: Boletim-de-Divulgacao. 1973, No. 18, 280 pp.
PY: 1973
LA: Portuguese, English
AB: The bulletin includes English abstracts of the following papers: Influence of leaf removal and the period of storage on the commercial quality of sugar cane, by F.V. Novaes; Crude fibre, cellulose and lignin composition and cellulose fermentation in vitro as affected by plant maturity in sugar cane varieties, by L.A.C. Lovadini; The phenology of some beetle pests of cocoa in Espirito Santo State by J.M. de Abreu; Effects and symptoms of macronutrient deficiencies on the growth and mineral composition of cashew, by L.A. Rovira; and Processes to accelerate banana multiplication by V.P.M.S. Lima.

ADDITIONAL ABSTRACT: The bulletin includes an English abstract of the following paper: Comparative studies with *Xanthomonas citri*, the pathogen of citrus canker, and *X. citri* f.sp. *aurantifolia*, the pathogen of Galego lime canker, by T.Namekata.

ADDITIONAL ABSTRACT: The bulletin includes an English abstract of the following paper: Contribution to the study of aphids (Homoptera: Aphididae) found in peach trees in the State of Sao Paulo, by P.S. Mansur.

DE: sugarcane-; storage-; quality-; DEFOLIATION-; maturity-; composition-; major-elements; deficiency-; symptoms-; plant-composition; arthropod-pests; tropical-crops; subtropical-fruits; citrus-fruits; fruit-crops;

temperate-fruits; nut-crops; sugar-crops; pests-; peaches-

OD: Aphididae-; Aphidoidea-; Saccharum-; Prunus-persica; COLEOPTERA-

GE: Brazil-

ID: sugar-cane-plant; cane-composition; sugar-cane,-cane; cacao; beetles; cashew-nutrition; banana-propagation; *Xanthomonas-citri*; citrus-diseases; lime-(Citrus)-diseases

BT: arthropods; invertebrates; animals; pests; Aphidoidea; Sternorrhyncha; Homoptera; Hemiptera; insects; Poaceae; Cyperales; monocotyledons; angiosperms; Spermatophyta; plants; Prunus; Rosaceae; Rosales;

dicotyledons; South-America; America; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: AA000; FF040; FF600

CD: Agriculture-General; Plant-Composition; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Miscellaneous

UD: 951116

AN: 730313536

Record 217 of 298 - CABPESTCD 1973-1988

TI: Role of citrus leaf-miner (*Phyllocnistis citrella* Staintan), on the prevalence and severity of citrus canker (*Xanthomonas citri* (Hasse) Dowson).

AU: Sinha-MK; Batra-RC; Uppal-DK

AD: Regional Fruit Research Station, Abohar, India.

SO: Madras-Agricultural-Journal. 1972, 59: 4, 240-245; 8 ref.

PY: 1972

LA: English

AB: In a survey of 35 citrus spp. and cvs the prevalence and severity of canker was greatly increased where there were injuries caused by *P. citrella*.

DE: arthropod-pests; subtropical-fruits; citrus-fruits; fruit-crops

OD: *Phyllocnistis-citrella*; Citrus-; *Xanthomonas*-; *Phyllocnistis*-

GE: India-

ID: *Xanthomonas-citri*; disease-complex; citrus-diseases; pest-relationships

BT: arthropods; invertebrates; animals; pests; *Phyllocnistis*; *Phyllocnistidae*; Lepidoptera; insects; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Pseudomonadaceae; Gracilicutes; bacteria;

prokaryotes; South-Asia; Asia; *Xanthomonas*; Gram-negative-bacteria

CC: FF600; FF020; FF900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Breeding-and-Genetics; Environmental-Tolerance-of-Plants

PT: Journal-article

IS: 0024-9602

UD: 951116

AN: 730307077

Record 218 of 298 - CABPESTCD 1973-1988

TI: Studies on the antimicrobial effects of actinomycin-C group antibiotics on phytopathogenic micro-organisms.

AU: Sakurai-H; Shimada-T

AD: Ministry of Agriculture and Forestry, Kodaira-shi, Tokyo, Japan.

SO: Bulletin-of-the-Agricultural-Chemicals-Inspection-Station. 1971, No. 11, 122-126; 11 ref.

PY: 1971

LA: Japanese

LS: English

AB: A freshly isolated soil *Streptomyces* sp. produced 2 actinomycin-C fractions. Both, especially the first, were effective at 20 p.p.m. against *Pythium aphanidermatum* on kidney beans and both, especially the second, controlled citrus canker (*Xanthomonas citri*). Both were phytotoxic to bean primary leaves but not to citrus leaves.

DE: antibiotics-; injuries-; fungicides-; production-; beans-; control-; vegetables-; vegetable-legumes; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathology

OD: *Pythium-aphanidermatum*; *Phaseolus*-; *Streptomyces*-; citrus-; Fabaceae-

GE: Japan-

ID: Actinomycin-C; bean-(*Phaseolus*)-diseases; citrus-diseases; *Xanthomonas-citri*; actinomycin; actinomycin-C

BT: pesticides; *Pythium*; Peronosporales; Mastigomycotina; Eumycota; fungi; Fabaceae; Fabales; dicotyledons; angiosperms; Spermatophyta; plants; Streptomycetaceae; Actinomycetales; Firmicutes; bacteria; prokaryotes; Rutaceae; Sapindales; East-Asia; Asia; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Gram-negative-bacteria

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

UD: 951116

AN: 720303118

Record 219 of 298 - CABPESTCD 1989-1999

TI: Preventive measures for protecting northeastern Argentina from citrus canker (*Xanthomonas axonopodis* pv. *citri*).

OT: Medidas preventivas para proteger al NOA de la canchrosis de los citrus (*Xanthomonas axonopodis* pv. *citri*).

AU: Ramallo-NEV-de; Ramallo-J; Ploper-LD; Gonzalez-V; Vera-L; Figueroa-H; de-Ramallo-NEV

AD: Seccion Fitopatologia, EEAOC, Argentina.

SO: Avance-Agroindustrial. 1999, 19: 77, 13-15; 2 ref.

PY: 1999

LA: Spanish

AB: Results of serological tests (ELISA and immunofluorescence) to detect the presence of *Xanthomonas axonopodis* pv. *citri* during 1993-97 are presented. The results show that during those years, citrus canker was not present in the citrus-producing area of Tucuman, Argentina.

DE: immunofluorescence-; immunological-techniques; ELISA-; diagnostic-techniques; plant-pathogens; plant-pathogenic-bacteria; plant-diseases

OD: Citrus-; *Xanthomonas-axonopodis*-pv.-*citri*

GE: Argentina-

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-axonopodis*; *Xanthomonas*; *Xanthomonadaceae*; Gracilicutes; bacteria; prokaryotes; South-America; America;

Developing-Countries; Threshold-Countries; Latin-America

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0326-1131

UD: 19991102

AN: 19991006309

Record 220 of 298 - CABPESTCD 1989-1999

TI: The effect of irrigation practices on the spatio-temporal increase of Asiatic citrus canker in simulated nursery plots in Reunion Island.

AU: Pruvost-O; Gottwald-TR; Brocherieux-C

AD: Research Plant Pathologists, CIRAD, Laboratoire de Phytopathologie, BP 180, 97455 Saint Pierre Cedex, Reunion Island, France.

SO: European-Journal-of-Plant-Pathology. 1999, 105: 1, 23-37; 38 ref.

PY: 1999

LA: English

AB: The influence of overhead, drip, and mist irrigation systems on the development of Asiatic citrus canker was

studied in simulated, Mexican-lime nurseries in Reunion Island. Overhead irrigation exacerbated the increase of disease incidence and severity caused by a streptomycin-resistant strain of *Xanthomonas axonopodis* pv. citri. The temporal development of Asiatic citrus canker for overhead irrigated nursery plots was best described by an exponential model, because disease incidence in these plots did not come close to an asymptote during the experimental period. This can be explained by the continuous production of new growth, susceptible to infection by *X. a. pv. citri*, and splash dispersal of *X. a. pv. citri* associated with overhead irrigation. Based on spatial correlation and spatio-temporal analyses, aggregated disease patterns were found irrespective of the irrigation system. In overhead-irrigated plots, the spread of *X. a. pv. citri* lacked directionality. Rainstorms of short duration and high intensity were apparently associated with disease increase in drip-irrigated plots. There is a need to improve cultivation practices in Reunion Island citrus nurseries to minimize Asiatic citrus canker incidence in nurseries and to minimize the introduction of *X. a. pv. citri* to new groves.

DE: irrigation-; nurseries-; planting-stock; subtropics-; tropics-; epidemiology-; plant-diseases; plant-pathogens; plant-pathogenic-bacteria; fruit-crops; plant-pathology

OD: Citrus-; *Xanthomonas-axonopodis*-pv.-citri; bacteria-

GE: Reunion-

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-axonopodis*; *Xanthomonas*; *Xanthomonadaceae*; Gracilicutes; bacteria; prokaryotes; Indian-Ocean-Islands;

Developing-Countries; Francophone-Africa

CC: JJ800; FF100; FF600

CD: Soil-Water-Management; Plant-Production; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0929-1873

UD: 990816

AN: 991003268

Record 221 of 298 - CABPESTCD 1989-1999

TI: ITSC participates in IOCV conference.

AU: Vuuren-F-van; Luttig-M; van-Vuuren-F

AD: Disease Management division, South Africa.

SO: Neltropika-Bulletin. 1999, No. 303, 9-10, 12.

PY: 1999

LA: English

LS: Afrikaans

AB: The presentations given by South African scientists at the 14th conference of the International Organization of Citrus Virologists (IOCV) held in Campinas, Brazil in September 1998 are listed. Highlights of other presentations at the conference are also listed: diseases present in South Africa (tristeza, psorosis, tatter leaf, blight, greening and citrus viroids) and diseases not present in South Africa (leprosis, citrus variegated chlorosis and citrus canker).

DE: plant-diseases; plant-pathogens; plant-pathology

OD: Citrus-; plant-viruses

GE: South-Africa

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; viruses; plant-pathogens; pathogens; Southern-Africa; Africa-South-of-Sahara; Africa; Developing-Countries; Threshold-Countries; Anglophone-Africa; Commonwealth-of-Nations

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Conference-paper; Journal-article

UD: 990816

AN: 991003142

Record 222 of 298 - CABPESTCD 1989-1999

TI: Citrus leaf miner: a factor for increase of pests and citrus canker.

OT: Lagarta minadora dos citros: um fator do aumento de pragas e cancro citrico.

AU: Rodrigues-JCV; Rossetti-V; Machado-MA; Sobrinho-JT; Lima-Nogueira-N-de; de-Lima-Nogueira-N

AD: Centro de Energia Nuclear na Agricultura, Universidade de Sao Paulo, Caixa Postal 96, 13400-970 Piracicaba

(SP), Bolsista da Capes, Brazil.

SO: Laranja. 1998, 19: 1, 49-60; 14 ref.

PY: 1998

LA: Portuguese

LS: English

AB: Larvae of the gracillariid *Phyllocnistis citrella* mine the adaxial and abaxial surfaces of newly-formed leaves. Citrus canker caused by *Xanthomonas axonopodis* pv. *citri* was found to be associated with *P. citrella* damage in Parana, Rio Grande do Sul, and Sao Paulo, Brazil. Citrus canker pustules were often observed over and along the entire length of larval tunnels on Citrus leaves and branches. It is suggested that *P. citrella* can disseminate and facilitate infection by *X. axonopodis* pv. *citri*. Elevated populations of *Brevipalpus phoenicis*, the mite vector of leprosis virus, were also observed in Citrus leaves with gracillariid damage.

DE: damage-; vectors-; transmission-; insect-pests; plant-pests; plant-diseases; plant-pathogenic-fungi; plant-pathogens; plant-pathogenic-bacteria; fruit-crops; agricultural-entomology; plant-pathology

OD: *Phyllocnistis-citrella*; *Brevipalpus-phoenicis*; Citrus-; *Xanthomonas*-; bacteria-; arthropods-

GE: Rio-Grande-do-Sul; Brazil-; Sao-Paulo; Parana-

ID: *Xanthomonas-axonopodis-pv-citri*; *Xanthomonas-axonopodis*

BT: *Phyllocnistis*; *Phyllocnistidae*; Lepidoptera; insects; arthropods; invertebrates; animals; *Brevipalpus*;

Tenuipalpidae; Prostigmata; mites; Acari; Arachnida; Rutaceae; Sapindales; dicotyledons; angiosperms;

Spermatophyta; plants; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Brazil; Developing-Countries;

Latin-America; South-America; America; Threshold-Countries; *Xanthomonas*

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 990516

AN: 991101147

Record 223 of 298 - CABPESTCD 1989-1999

TI: Effect of temperature on antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.

AU: Masroor-MK; Sudhir-Chandra

AD: Department of Botany, University of Allahabad, Allahabad-211 002, India.

SO: Bioved. 1995, 6: 1, 65-68; 10 ref.

PY: 1995

LA: English

AB: In laboratory studies, temperature was found to affect antibiotic production. The antagonists *Aspergillus clavatus*, *A. flavus* and *A. niger* active against the citrus canker pathogen, *Xanthomonas campestris* pv. *citri*, were grown within a wide range of temperatures (10°C to 45°C). The results showed that 30°C was the most suitable temperature for antibiotic production.

DE: plant-pathogens; plant-diseases; plant-pathogenic-bacteria; antagonists-; antagonism-

OD: *Aspergillus*-; Citrus-; *Aspergillus-clavatus*; *Aspergillus-niger*; *Aspergillus-flavus*;

Xanthomonas-campestris-pv.-citri

ID: Hyphomycetes; mitosporic-fungi

BT: Deuteromycotina; Eumycota; fungi; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Aspergillus; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes

CC: FF600; HH100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control

PT: Journal-article

IS: 0971-0108

UD: 981116

AN: 981008447

Record 224 of 298 - CABPESTCD 1989-1999

TI: Citrus breeding - culture and selection of hybrids.

AU: Hsu-HsinTszu; Hwang-AShiang; Hsu-HT; Hwang-AS; Chen-YungWu (ed.); Chang-LinRen

AD: Chia-Yi Agricultural Experiment Station, TARI, Taiwan.

SO: Proceedings of a symposium on enhancing competitiveness of fruit industry, Taichung, Taiwan, 20-21 March 1997. Special-Publication -Taichung-District-Agricultural-Improvement-Station. 1997, No. 38, 7-12; 19 ref.

PB: Taichung District Agricultural Improvement Station; Tatsuen; Taiwan

PY: 1997

LA: Chinese

LS: English

AB: Citrus tankan cv. Tankan and *C. grandis* [*C. maxima*] cvs. Wentan and Fortune were used as major seed parents and pollinated with sweet oranges [*C. sinensis*] and mandarins [*C. reticulata*]. Overall, 24 000 seedlings were raised and zygotic seedlings of polyembryonic seed parents were identified from the nucellars by leaf morphology, embryo colour, and colour of young shoots. A total of 5960 zygotic seedlings has been planted in the field since 1988 in high-density plantings. Flowering rate of seedlings of the major combinations within 5 years after planting varied from 60.7% (Fortune X Chandler) to 17.5% (Wentan X sweet oranges). The juvenile period seemed to be inherited mainly from seed parents. Seedlings became more resistant to citrus canker [*Xanthomonas axonopodis*] with age. Six promising hybrids with few seeds, early maturity, good quality and resistance to citrus canker were selected between 1994 and 1996 and improved in Taitung and Chia-Yi area for advanced selection.

DE: interspecific-hybridization; polyembryony; plant-morphology; hybrids; plant-diseases; plant-pathogenic-bacteria; fruits; quality; artificial-selection; fruit-crops; pummelos; oranges; mandarins

OD: Citrus-tankan; Citrus-maxima; Citrus-sinensis; Citrus-reticulata

GE: Taiwan-

ID: *Xanthomonas-axonopodis*

BT: Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-East-Asia; Asia; Developed-Countries; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Gram-negative-bacteria

CC: FF020

CD: Plant-Breeding-and-Genetics

PT: Conference-paper; Journal-article

IS: 0258-2708

UD: 980816

AN: 981608200

Record 225 of 298 - CABPESTCD 1989-1999

TI: Efficacy of different chemo-therapeutants for the control of citrus canker.

AU: Kapur-S; Cheema-SS; Kapur-SP

AD: Department of Horticulture, Punjab Agricultural University, Ludhiana 141 004, India.

SO: Plant-Disease-Research. 1997, 12: 2, 159-161; 4 ref.

PY: 1997

LA: English

AB: During 1992-94, field trials were conducted to test the efficacy of copper oxychloride, mancozeb + thiophanate-methyl, Bordeaux mixture and streptocycline to control canker (caused by *Xanthomonas axonopodis* pv. citri) of grapefruit trees. The first spray was given in the last week of June, the second to the new flush in July and subsequent sprays were given regularly at 2-week intervals. Disease incidence and intensity were recorded before and after each spray. All the treatments reduced disease incidence. Pruning followed by 1 spray of copper oxychloride (0.3%) and 2 sprays of streptocycline (0.01%) provided the most effective control and reduced disease incidence by 68.4%. Spraying once with copper oxychloride followed by 1 spray of streptocycline was also effective, reducing disease incidence by 68.3%.

DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; grapefruits; efficacy; control; plant-disease-control; chemical-control; fungicides; antibiotics; copper-oxychloride; mancozeb; thiophanate-methyl; Bordeaux-mixture; sprays; spraying; pruning; fruit-crops; plant-pathology

OD: bacteria; Citrus-paradisi

GE: India; Indian-Punjab

ID: *Xanthomonas-axonopodis*-pv-citri; streptocycline

RN: 1332-40-7; 8018-01-7; 23564-05-8; 8011-63-0

BT: prokaryotes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; South-Asia; Asia; Commonwealth-of-Nations; Developing-Countries; India

CC: FF600; HH400

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs
PT: Journal-article
IS: 0970-4914
UD: 980516
AN: 981003452

Record 226 of 298 - CABPESTCD 1989-1999

TI: Incidence of the Asiatic form of citrus canker in Iran.
AU: Mostofi-Zadeh-R; Rahimian-H
AD: Dept. of Plant Pathology, College of Agriculture, Tarbait-Modares University, Iran.
SO: Iranian-Journal-of-Plant-Pathology. 1996, 32: 3-4, 189-190.
PY: 1996
LA: English
AB: Mexican lime (*Citrus aurantifolia*) fruits with raised corky spots similar to those caused by the citrus canker bacterium (*Xanthomonas axonopodis* pv. *citri*) were found in a grocery in Sari, Iran, in 1995. A gram-negative, rod-shaped bacterium with yellow mucoid colonies was isolated from the corky spots on sucrose nutrient agar. The metabolism and nutrition of the strain was characterized. Brown raised leaf spots were produced following wound inoculation of a broad selection of citrus species. The bacterium was reisolated from inoculated plants 1-2 weeks after appearance of the symptoms. The phenotypic features and wide host range indicated that this strain was the Asiatic form of *X. axonopodis* pv. *citri* and should be considered a serious threat to citrus production in both southern and northern provinces in Iran.
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; limes-; symptoms-; characteristics-; cultures-; metabolism-; nutrition-; strains-; pathogenicity-; host-range; cankers-; morphology-
OD: Citrus-
GE: Iran-
ID: *Xanthomonas-axonopodis-pv-citri*; *Citrus-aurantifolia*; Rutales
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Developing-Countries; Middle-East; Threshold-Countries; West-Asia; Asia; Citrus
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0006-2774
UD: 980516
AN: 981002458

Record 227 of 298 - CABPESTCD 1989-1999

TI: An epidemiological analysis of the spread of citrus canker in urban Miami, Florida, and synergistic interaction with the Asian citrus leafminer.
AU: Gottwald-TR; Graham-JH; Schubert-TS
AD: US Department of Agriculture, Agricultural Research Service, 2120 Camden Rd, Orlando, FL 32803, USA.
SO: Fruits-Paris. 1997, 52: 6, 383-390; 17 ref.
PY: 1997
LA: English
LS: French, Spanish
AB: After 12 main outbreaks of Asiatic citrus canker (ACC) caused by *Xanthomonas axonopodis* pv. *citri* (Xac), during 1986-92 in Florida, USA, a new outbreak of ACC was discovered in the residential Miami area in 1995. The feeding activities of the Asian leafminer *Phyllocnistis citrella* facilitates Xac infections. This generates large amounts of inoculum, promoting spread of the bacteria by rain splash. It was established that the present canker had existed in the Miami residential area for at least 2-3 years, but the origin or source of this introduction, which was demonstrated to differ from the previous outbreaks, remains unknown. Once the disease is established, the most important ways of disease spread are rain splash and wind. Individual meteorological events, such as thunderstorms, tornadoes, tropical storms and hurricanes have contributed to medium-to-long distance dispersal of Xac from the original focus. As a number of impediments to eradication presently exist, the eradication agency has adopted a new survey method which allows the early discovery of new infections the farthest from the focus and their immediate

elimination in an attempt to limit further spread of citrus canker.

DE: cankers-; epidemiology-; disease-control; plant-disease-control; control-; plant-diseases; plant-pathogens; plant-pathogenic-bacteria; vectors-; disease-vectors; disease-transmission; plant-pests; insect-pests; fruit-crops; plant-pathology; agricultural-entomology

OD: Citrus-; Phyllocnistis-citrella; bacteria-; arthropods-

GE: USA-; Florida-

ID: Xanthomonas-axonopodis-pv-citri

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Phyllocnistis; Phyllocnistidae; Lepidoptera; insects; arthropods; invertebrates; animals; prokaryotes; Developed-Countries; North-America; America; OECD-Countries; Southeastern-States-of-USA; Southern-States-of-USA; USA; Gulf-States-of-USA; South-Atlantic-States-of-USA

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

IS: 0248-1294

UD: 980516

AN: 981002233

Record 228 of 298 - CABPESTCD 1989-1999

TI: Towards an improvement of citrus canker control in Reunion island.

AU: Pruvost-O; Verniere-C; Hartung-J; Gottwald-T; Quetelard-H

AD: Laboratoire de Phytopathologie, CIRAD/INRA, BP 180, 97455 Saint-Pierre Cedex, France.

SO: Fruits-Paris. 1997, 52: 6, 375-382; 29 ref.

PY: 1997

LA: English

LS: French, Spanish

AB: The citrus industry in Reunion started in the 1960s, with the introduction of propagation plant material from countries where citrus bacterial canker disease (CBCD) had never been reported. CBCD possibly occurred in Reunion at that time on wild citrus trees in Creole gardens. Control of CBCD in nurseries can potentially improve disease control in new grove planting as infected plants would be the main source of primary inoculum.

Xanthomonas axonopodis pv. *citri* (Xac), associated with infected nursery citrus, is a target of international phytosanitary quarantine. A sensitive and specific detection technique of Xac was developed allowing detection of approximately 102-cells/g of citrus leaf. In most citrus growing areas in Reunion, year-round temperatures and annual rainfall are conducive to infection by Xac. Spatial and spatio-temporal studies confirmed that disease patterns were aggregated in the field over time. Increase of disease rates was greater in plots with overhead irrigation, and in the case of plots with drip irrigation, it was associated with natural rainfall. To minimize CBCD transmission to a new grove, a modernization scheme for local citrus plant production was proposed. Grapefruit plants produced according to this improved scheme have been planted under various environmental conditions to experimentally determine the durability of citrus canker control resulting from the use of disease-free plants combined with other integrated control measures. It is suggested that the improvement of the citrus nursery production scheme will essentially benefit citrus cultivars of low or moderate susceptibility to CBCD.

DE: epidemiology-; control-; plant-disease-control; plant-diseases; plant-pathogens; plant-pathogenic-bacteria; integrated-control; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathology

OD: Citrus-; bacteria-

GE: Reunion-

ID: Xanthomonas-axonopodis-pv-citri

BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; prokaryotes; Developing-Countries; Francophone-Africa; Indian-Ocean-Islands; Southern-Africa; Africa-South-of-Sahara; Africa

CC: FF600; HH300

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Integrated-Pest-Management

PT: Journal-article

IS: 0248-1294

UD: 980516

AN: 981002232

Record 229 of 298 - CABPESTCD 1989-1999

TI: Goat weed - a host of citrus canker (*Xanthomonas campestris* pv. *citri*).
AU: Pabitra-Kalita; Bora-LC; Bhagabati-KN
AD: Department of Plant Pathology, Assam Agricultural University, Jorhat 785 013, Assam, India.
SO: Journal-of-Mycology-and-Plant-Pathology. 1997, 27: 1, 96-97; 3 ref.
PY: 1997
LA: English
AB: Weeds commonly found in and around the citrus orchards of Assam Agricultural University, Assam, India, were surveyed for infection by the citrus canker pathogen, *X. campestris* pv. *citri* [*X. axonopodis* pv. *citri*], during 1993-95. Goat weed (*Ageratum conyzoides*), the most predominant weed species, was found to be highly infested with the bacterium, showing typical water soaked lesions. A pure culture of the bacterium was isolated from infected leaves of this weed and its pathogenicity was confirmed on goat weed and Assam lemon (*Citrus limon*). Repeated cross-inoculations of *X. axonopodis* pv. *citri* revealed that goat weed was highly susceptible, showing 90-100% disease incidence. Other commonly found weeds were also inoculated but failed to produce symptoms. It is concluded that since goat weed grows throughout the year in citrus orchards, it may be considered as an important host of *X. axonopodis* pv. *citri* and may serve as a significant source of primary inoculum for the next season.
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; weeds-; pathogenicity-; orchards-; fruit-crops; plant-pathology
OD: Citrus-; *Ageratum-conyzoides*; bacteria-
GE: India-; Assam-
ID: *Xanthomonas-axonopodis-pv-citri*
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Ageratum*; Asteraceae; Asterales; prokaryotes; South-Asia; Asia; Commonwealth-of-Nations; Developing-Countries; India
CC: FF600; FF500
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Weeds-and-Noxious-Plants
PT: Journal-article
UD: 980516
AN: 981001601

Record 230 of 298 - CABPESTCD 1989-1999

TI: Influence of environmental parameters on citrus canker incidence in Assam.
AU: Pabitra-Kalita; Bora-LC; Bhagabati-KN; Kalita-P
AD: Department of Plant Pathology, Assam Agricultural University, Jorhat 785013, India.
SO: Journal-of-the-Agricultural-Science-Society-of-North-East-India. 1995, 8: 1, 33-35; 5 ref.
PY: 1995
LA: English
AB: Studies during 1993 and 1994 showed that the highest incidence of citrus canker (*Xanthomonas campestris* pv. *citri* [*X. axonopodis* pv. *citri*]) was in August. A constant high incidence of the disease was observed during June to September in both years. During these months the highest temperatures, rainfall and RH were recorded depicting a positive correlation between these parameters with high disease incidence in the state.
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; environmental-factors; relative-humidity; rain-; temperature-
OD: citrus-; *xanthomonas-campestris-pv.-citri*
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
UD: 971116
AN: 971006547

Record 231 of 298 - CABPESTCD 1989-1999

TI: Antibacterial activity of plant diffusate against *Xanthomonas campestris* pv. *citri*.

AU: Akhtar-MA; Rahber-Bhatti-MH; Aslam-M
 AD: Crop Diseases Research Institute, National Agricultural Research Centre, Park Road, Islamabad-45500, Pakistan.
 SO: International-Journal-of-Pest-Management. 1997, 43: 2, 149-153; 14 ref.
 PY: 1997
 LA: English
 AB: 208 diffusates from various plants such as forest trees, herbs, shrubs, fruit trees, spices, vegetables, food legumes, fodder, oil seed, fibre crops, cereals and ornamentals were evaluated using an agar diffusion assay to determine their inhibitory action, if any, against *X. campestris* pv. *citri* [*X. axonopodis* pv. *citri*]. Diffusates from the majority of forest trees, herbs and shrubs showed an inhibitory effect against strain XC-100 of the bacterium. Diffusates from various parts of *Phyllanthus emblica*, *Acacia nilotica*, *Sapindus mukorossi* and *Terminalia chebula*, which exhibited an inhibition zone measuring 4.83-6.00 mm at 50 g/litre concentration, appeared to be the most effective. These diffusates showed an inhibitory effect even at a concentration of 1.25 g/litre. These diffusates, at concentrations of 50, 20 and 10 g/litre, were significantly ($P<0.01$) more effective in reducing the number of lesions on detached leaves and fruits of grapefruit cv. Frost Marsh, thus exhibiting protective as well as curative actions. Diffusates from higher plants, therefore, appear to be potential antimicrobial agents which could be used for the management of citrus canker disease.
 DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; grapefruits-; control-; plant-extracts; antibacterial-agents; multipurpose-trees; pesticidal-properties; fruit-crops; plant-pathology
 OD: *Phyllanthus-emblica*; *Acacia-nilotica*; *Sapindus-mukorossi*; *Terminalia-chebula*; citrus-; bacteria-; *Citrus-paradisi*
 GE: Pakistan-
 ID: *Xanthomonas-axonopodis-pv-citri*
 BT: *Phyllanthus*; *Euphorbiaceae*; *Euphorbiales*; dicotyledons; angiosperms; *Spermatophyta*; plants; *Acacia*; *Mimosoideae*; *Fabaceae*; *Fabales*; *Sapindus*; *Sapindaceae*; *Sapindales*; *Terminalia*; *Combretaceae*; *Myrtales*; *Rutaceae*; prokaryotes; *Citrus*; Commonwealth-of-Nations; Developing-Countries; South-Asia; Asia
 CC: FF600; HH400; KK540; KK600; SS200
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs;
 Forest-Products-Miscellaneous,-including-Minor-Forest-Products; Agroforestry; Agricultural-Products-Plant
 PT: Journal-article
 IS: 0967-0874
 UD: 971116
 AN: 971005540

Record 232 of 298 - CABPESTCD 1989-1999

TI: Bacterial citrus canker.
 AU: Schubert-TS; Miller-JW
 AD: Florida Department of Agriculture and Consumer Services, Division of Plant Industry, P.O. Box 147100, Gainesville, FL 32614-7100, USA.
 SO: Plant-Pathology-Circular-Gainesville. 1996, No. 377, 6 pp.; 10 ref.
 PB: Division of Plant Industry; Gainesville; Florida Department of Agriculture and Consumer Services; USA
 PY: 1996
 LA: English
 AB: Citrus canker, caused by *Xanthomonas axonopodis* pv. *citri*, is a serious disease on most commercial citrus varieties and some citrus relatives. The pathogen causes necrotic lesions on leaves, stems and fruit. Severe infections cause defoliation, badly blemished fruit, premature fruit drop, twig dieback and general tree decline. The aetiology, epidemiology, host range and survey and detection of the disease are described. Quarantine methods to control the disease are discussed.
 DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; biology-; fruit-crops; plant-pathology
 OD: citrus-; bacteria-
 ID: *Xanthomonas-axonopodis-pv-citri*
 BT: *Rutaceae*; *Sapindales*; dicotyledons; angiosperms; *Spermatophyta*; plants; prokaryotes
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Miscellaneous

IS: 0032-0870
UD: 970816
AN: 971004238

Record 233 of 298 - CABPESTCD 1989-1999

TI: Evaluation of the Biolog substrate utilization system to identify and assess metabolic variation among strains of *Xanthomonas campestris* pv. *citri*.

AU: Verniere-C; Pruvost-O; Civerolo-EL; Gambin-O; Jacquemoud-collet-JP; Luisetti-J

AD: Laboratoire de Phytopathologie, CIRAD/IRFA, 97455 Saint Pierre Cedex, Reunion Island.

SO: Applied-and-Environmental-Microbiology. 1993, 59: 1, 243-249; 23 ref.

PY: 1993

LA: English

AB: Metabolic fingerprints of 148 strains of *X. campestris* pv. *citri* originating from 24 countries and associated with various forms of citrus bacterial canker disease (CBCD) were obtained using the Biolog substrate utilization system. Metabolic profiles were used to attempt strain identification. Only 6.8% of the studied strains were correctly identified when the commercial Microlog 2N data base was used alone. When the data base was supplemented with data from 54 strains of *X. campestris* pv. *citri* (40 CBCD-A strains, 8 CBCD-B strains, and 6 CBCD-C strains) and data from 43 strains of *X. campestris* associated with citrus bacterial spot disease, the percentage of correct identifications was 70%. Thus, it is recommended that users supplement the commercial data base with additional data prior to using the program for identification purposes. The utilization of Tween 40 can help to differentiate strains associated with CBCD and citrus bacterial spot disease. These results confirmed the separation of *X. campestris* pv. *citri* into different subgroups (strains associated with Asiatic citrus canker (CBCD-A), canker B (CBCD-B), and Mexican lime canker (CBCD-C)). The utilization of L-fucose, D-galactose and alaninamide can be used as markers to differentiate strains associated with these groups. A single strain associated with bacteriosis of Mexican lime in Mexico (CBCD-D) was closely similar to CBCD-B strains.

DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; strains-; metabolism-

OD: *Xanthomonas-campestris*-pv.-*citri*

BT: *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0099-2240

UD: 970516

AN: 971002595

Record 234 of 298 - CABPESTCD 1989-1999

TI: Phylloplane microflora of citrus and their role in management of citrus canker.

AU: Pabitra-Kalita; Bora-LC; Bhagabati-KN; Kalita-P

AD: Department of Plant Pathology, Assam Agricultural University, Jorhat 785 013, India.

SO: Indian-Phytopathology. 1996, 49: 3, 234-237; 14 ref.

PY: 1996

LA: English

AB: Four species of bacteria (*Bacillus subtilis*, *B. polymyxa*, *Pseudomonas fluorescens* and *Serratia marcescens*) and 3 species of fungi (*Aspergillus terreus*, *Trichoderma viride* and *Trichoderma harzianum*) isolated from the phylloplane of lemon cv. Assam lemon, inhibited in vitro growth of *Xanthomonas campestris* pv. *citri*, the incitant of citrus canker. When the antagonists were tested for their efficacy in the control of citrus canker by applying them over crop foliage of Assam lemon, they also reduced citrus canker incidence under field conditions. *B. subtilis* was the most effective antagonist exhibiting max. (14.7 mm) inhibition of the pathogen and reducing the disease incidence by 61.9%.

DE: biological-control-agents; plant-disease-control; antagonists-; lemons-; biological-control; diseases-; control-; disease-control; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology

OD: citrus-limon; citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Bacillus-subtilis*; *Bacillus-polymyxa*;

Pseudomonas-fluorescens; *Serratia-marcescens*; *Aspergillus-terreus*; *Trichoderma-viride*; *Trichoderma-harzianum*; bacteria-

ID: phylloplane
BT: Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Bacillus; Bacillaceae; Firmicutes; Pseudomonas; Serratia; Enterobacteriaceae; Aspergillus; Deuteromycotina; Eumycota; fungi; Trichoderma
CC: FF600; HH100
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control
PT: Journal-article
IS: 0367-973X
UD: 970516
AN: 971001583

Record 235 of 298 - CABPESTCD 1989-1999

TI: Effect of several fungicides for control of citrus canker (*Xanthomonas citri* (Hasse) Dowson).
AU: Zhang-KinShan; He-ShiZhong; Huang-Zhong; Zhang-KS; He-SZ; Huang-Z
AD: State Lixin Citrus Orchard, Fuchuan, Guangxi, China.
SO: South-China-Fruits. 1996, 25: 3, 20.
PY: 1996
LA: Chinese
LS: English
AB: Copper hydroxide (as Koshad), carbendazim, sulfuric acid, streptomycin and Bordeaux mixture were tested for control of *X. citri* [*X. axonopodis* pv. *citri*] on 6-year-old trees of Robertson Navel orange. The results showed that copper hydroxide gave the best disease control at 800 times concn.
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; chemical-control; plant-disease-control; fungicides-; carbendazim-; sulfuric-acid; streptomycin-; Bordeaux-mixture; oranges-; control-; copper-hydroxide; disease-control; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathology
OD: citrus-; bacteria-
ID: *Xanthomonas-axonopodis*-pv-*citri*
RN: 10605-21-7; 7664-93-9; 57-92-1; 8011-63-0; 20427-59-2
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; prokaryotes
CC: FF600; HH400
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs
PT: Journal-article
UD: 970516
AN: 971001022

Record 236 of 298 - CABPESTCD 1989-1999

TI: The efficacy of windbreaks in reducing the spread of citrus canker caused by *Xanthomonas campestris* pv. *citri*.
AU: Gottwald-TR; Timmer-LW
AD: USDA, ARS, Orlando, FL, USA.
SO: Tropical-Agriculture. 1995, 72: 3, 194-201; 29 ref.
PY: 1995
LA: English
AB: The effects of windbreaks and copper (Cu) bactericide applications alone and in combination on the spread of *X. c.* pv. *citri* and incidence of citrus canker were tested in Argentina during 1990 and 1991. The monomolecular temporal model was the most appropriate for describing citrus canker disease progress. The monomolecular rate of disease progress was significantly less for Cu bactericide and windbreaks compared with an untreated control. However, more significant reductions of disease progress occurred with the use of windbreaks alone or in combination with Cu bactericide. Disease gradients were significantly less extensive when a Cu bactericide was used compared with untreated control plots, with significant additional reductions when windbreaks were employed. Temporal and spatial analyses of citrus canker epidemics suggested that the use of windbreaks was a more effective disease control strategy than the use of a Cu bactericide and significantly reduced temporal disease increase and spatial spread of citrus canker over time. As expected, Cu bactericide did reduce disease increase and spread but not as effectively as windbreaks. Temporal increase and spatial spread of disease associated with A-strain and B-strain of *X. c.* pv. *citri* in lemon plantings were not significantly different suggesting that for a susceptible host such as

lemon, the 2 strains are equivalent in virulence and epidemiological potential.

DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; citrus-fruits; subtropical-tree-fruits; chemical-control; plant-disease-control; windbreaks-; copper-; bactericides-; lemons-; integrated-control; spread-; control-; fruit-crops; plant-pathology

OD: citrus-limon; citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Argentina-

RN: 7440-50-8

BT: Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; Threshold-Countries; Developing-Countries; Latin-America; South-America; America

CC: FF600; HH400; HH300

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs; Integrated-Pest-Management

PT: Journal-article

IS: 0041-3216

UD: 960416

AN: 961002010

Record 237 of 298 - CABPESTCD 1989-1999

TI: Genetic analysis of hrp-related DNA sequences of *Xanthomonas campestris* strains causing diseases of citrus.

AU: Leite-RP Jr.; Egel-DS; Stall-RE

AD: Department of Plant Pathology, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida 32611, USA.

SO: Applied-and-Environmental-Microbiology. 1994, 60: 4, 1078-1086; 36 ref.

PY: 1994

LA: English

AB: The hrp gene cluster of strains of *X. campestris* that cause diseases of citrus was examined by Southern hybridization of genomic DNA and by restriction endonuclease analysis of enzymatically amplified DNA fragments of the hrp gene cluster. The hrp genes were present in all strains of the pathovars of *X. campestris* tested, including strains of the 3 aggressiveness groups of the citrus bacterial spot pathogen, *X. campestris* pv. *citrumelo*, *X. campestris* pv. *citri* strains in groups A, B and C, which cause citrus canker A, B and C, respectively, each produced characteristic restriction banding patterns of amplified hrp fragments. The restriction banding patterns of all strains within each group were identical. In contrast, restriction fragment length polymorphism was evident among strains of the moderately and weakly aggressive groups of *X. campestris* pv. *citrumelo*. *X. campestris* pv. *citrumelo* strains in the highly aggressive group had a homogeneous restriction banding pattern. The characteristic banding patterns obtained for each bacterial group indicated that *X. campestris* strains causing disease in citrus can be reliably differentiated and identified by restriction analysis of amplified DNA fragments of the hrp gene cluster. In addition, the phylogenetic analysis based on the restriction banding patterns of amplified fragments suggests a polyphyletic relationship of the hrp genes among the strains of *X. campestris* that cause disease in citrus.

DE: subtropical-tree-fruits; plant-diseases; plant-pathogens; plant-pathogenic-bacteria; DNA-; genes-; strains-; molecular-genetics; nucleotide-sequences; restriction-fragment-length-polymorphism; techniques-; differentiation-; fruit-crops; plant-pathology

OD: citrus-; *Xanthomonas-campestris*; bacteria-

BT: pathogens; bacteria; prokaryotes; plant-pathogens; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; WW000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biotechnology

PT: Journal-article

IS: 0099-2240

UD: 960216

AN: 961000325

Record 238 of 298 - CABPESTCD 1989-1999

TI: Rapid identification of a second outbreak of asiatic citrus canker in the Northern Territory using the polymerase

chain reaction and genomic fingerprinting.

AU: Gillings-MR; Fahy-PC; Broadbent-P; Barnes-D

AD: Biological and Chemical Research Institute, NSW Agriculture, PMB 10, Rydalmere, New South Wales 2116, Australia.

SO: Australasian-Plant-Pathology. 1995, 24: 2, 104-111; 25 ref.

PY: 1995

LA: English

AB: In May 1993, symptoms of asiatic citrus canker were found on West Indian lime, lemon and grapefruit trees in a mixed citrus orchard at Lambell's Lagoon, near Darwin, Northern Territory, close to the site of a previous (1991) canker outbreak. Symptoms occurred on the spring growth flush at the start of the wet season (Oct. 1992). The time lag between the appearance of symptoms and collection of material made it difficult to isolate the causal agent directly from the lesions, largely due to the overgrowth of secondary organisms. To overcome this difficulty, a method for detecting *Xanthomonas campestris* pv. *citri* was used based on PCR. A primer pair, known to amplify only DNA from group A of *X. c.* pv. *citri*, directed the amplification of a DNA fragment of the expected size (222 bp) from crude exudates prepared from leaf or fruit lesions, from mixed cultures, from inoculated citrus leaves and from positive control DNAs prepared from reference cultures of *X. c.* pv. *citri*. A second primer pair and a duplex PCR were then tested. These also generated products of the expected sizes, and hence a presumptive diagnosis of asiatic citrus canker was made. This is thought to be the first use of PCR technology to diagnose a field outbreak of citrus canker. The total time from specimen preparation to detection of PCR products was <7 h. Colonies resembling *X. c.* pv. *citri* were eventually recovered from only 2 of 11 symptomatic samples. A sensitive genomic fingerprinting technique provided strong evidence that the 1991 outbreak was the source of the current infestation.

DE: subtropical-tree-fruits; plant-diseases; plant-pathogens; plant-pathogenic-bacteria; biochemical-techniques; limes-; grapefruits-; lemons-; identification-; techniques-; molecular-genetics; polymerase-chain-reaction; DNA-fingerprinting; fruit-crops; plant-pathology

OD: citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-; *Citrus-paradisi*

GE: Australia-; Northern-Territory

BT: pathogens; bacteria; prokaryotes; plant-pathogens; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Citrus; Commonwealth-of-Nations; Australasia; Oceania; Developed-Countries; OECD-Countries; Australia

CC: FF600; ZZ900; WW000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology; Biotechnology

PT: Journal-article

IS: 0815-3191

UD: 951216

AN: 952311802

Record 239 of 298 - CABPESTCD 1989-1999

TI: A further outbreak of citrus canker near Darwin.

AU: Broadbent-P; Pitkethley-RN; Barnes-D; Bradley-J; Dephoff-C; Civerolo-EL; Gillings-MR; Fahy-PC

AD: NSW Agriculture, Biological and Chemical Research Institute, PMB 10, Rydalmere, New South Wales 2116, Australia.

SO: Australasian-Plant-Pathology. 1995, 24: 2, 90-103; 22 ref.

PY: 1995

LA: English

AB: Citrus canker (*Xanthomonas campestris* pv. *citri* Group A) was detected in a pummelo orchard at Lambell's Lagoon near Darwin, Northern Territory, Australia, in 1991. All citrus trees in the orchard were eradicated. Surveys of horticultural holdings at Lambell's Lagoon in 1992 failed to detect symptoms of citrus canker. Leaf washings from trees in each orchard failed to detect *X. c.* pv. *citri* using leaf enrichment or immunofluorescence techniques. Other xanthomonad isolates were obtained and these produced a slight callusing with watersoaking around wounds made in detached leaves of Duncan grapefruit. In 1993, canker symptoms were observed on lime and grapefruit twigs and fruit in a mixed citrus orchard 500 m from the 1991 outbreak site. This outbreak was confirmed as Group A of *X. c.* pv. *citri* on the basis of pathogenicity tests, fatty acid analyses of recovered bacteria, immunofluorescence microscopy and by genomic DNA fingerprinting.

DE: subtropical-tree-fruits; plant-diseases; plant-pathogens; plant-pathogenic-fungi; limes-; grapefruits-; pummelos-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-paradisi; Citrus-aurantiifolia; bacteria-; citrus-; Xanthomonas-campestris-pv.-citri; Citrus-maxima
 GE: Australia-; Northern-Territory
 BT: pathogens; fungi; plant-pathogens; bacteria; prokaryotes; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Commonwealth-of-Nations; Australasia; Oceania; Developed-Countries; OECD-Countries; Australia
 CC: FF600
 CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
 PT: Journal-article
 IS: 0815-3191
 UD: 951216
 AN: 952311801

Record 240 of 298 - CABPESTCD 1989-1999

TI: The hosts of Xanthomonas.

AU: Hayward-AC; Maraite-H; Zomorodian-A; Rudolph-K; Mew-TW; Vidaver-AK; Hokawat-S; Stall-RE; Civerolo-EL; Schaad-NW; Alvarez-A; Leyns-F; Hattingh-MJ; Ride-M; Rat-B; Rott-P; Duveiller-E; Pagel-W; Doorn-J-van; Van-Doorn-J; Roebroek-EJA; Pruvost-O; Manicom-BQ; Swings-JG (ed.); Civerolo-EL

AD: Department of Microbiology, University of Queensland, Qld. 4072, Australia.

SO: Xanthomonas. 1993, 1-119; 25 pp. of ref.

PB: Chapman & Hall; London; UK

PY: 1993

LA: English

AB: A table of species and pathovars of Xanthomonas with their natural hosts and host families is given in the introduction. The symptoms, host range, isolation and detection methods, geographical distribution, economic importance, epidemiology and control measures for some of the major diseases caused by Xanthomonas are discussed in separate sections as follows: Xanthomonas campestris pathovars on cassava: cause of bacterial blight and bacterial necrosis (by H. Maraite); Xanthomonas campestris pv. malvacearum: cause of bacterial blight of cotton (by A. Zomorodian and K. Rudolph); Xanthomonas oryzae pathovars on rice: cause of bacterial blight and bacterial leaf streak (by T.W. Mew); Xanthomonas campestris pv. phaseoli: cause of common bacterial blight of bean [Phaseolus vulgaris] (by A.K. Vidaver); Xanthomonas campestris pv. glycines: cause of bacterial pustule of soyabean (by S. Hokawat and K. Rudolph); Xanthomonas campestris pv. citri: cause of citrus canker (by R.E. Stall and E.L. Civerolo); Xanthomonas campestris pv. campestris: cause of black rot of crucifers (by N.W. Schaad and A. Alvarez); Xanthomonas campestris pv. graminis: cause of bacterial wilt of forage grasses (by F. Leyns); Xanthomonas campestris pv. vesicatoria: cause of bacterial spot of tomato and pepper [Capsicum] (by R.E. Stall); Xanthomonas campestris pv. pruni: cause of Prunus bacterial spot (by E.L. Civerolo and M.J. Hattingh); Xanthomonas populi: cause of bacterial canker of poplar [Populus] (by M. Ride); Xanthomonas fragariae: cause of angular leaf spot of strawberry (by B. Rat); Xanthomonas albilineans: cause of leaf scald of sugarcane (by P. Rott); Xanthomonas campestris pathovars on cereals: cause of leaf streak or black chaff diseases (by E. Duveiller and H. Maraite); Xanthomonas campestris pv. pelargonii: cause of bacterial leaf spot and stem rot on Pelargonium spp. (by W. Pagel); Xanthomonas campestris pv. hyacinthi: cause of yellow disease in Hyacinthus (by J. van Doorn and E.J.A. Roebroek); and Xanthomonas campestris pv. mangiferaeindicae: cause of bacterial black spot of mangoes (by O. Provost and B.Q. Manicom).

DE: plant-pathogenic-bacteria; plant-pathogens; plant-diseases; hosts-

OD: Xanthomonas-

ID: pathovars

BT: bacteria; prokaryotes; plant-pathogens; pathogens; Gram-negative-bacteria; Pseudomonadaceae; Gracilicutes

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Book-chapter

IB: 0-412-43420-2

UD: 951216

AN: 952310907

Record 241 of 298 - CABPESTCD 1989-1999

TI: Economics of chemical control of citrus canker caused by *Xanthomonas campestris* pv. *citri* under field conditions.

AU: Kale-KB; Kolte-SO; Peshney-NL

AD: All India Fruit Improvement Project (Citrus), Punjabrao Krishi Vidyapeeth, Akola 444 104, India.

SO: Indian-Phytopathology. 1994, 47: 3, 253-255; 4 ref.

PY: 1994

LA: English

AB: During Jul. 1988-Dec. 1990, the effects of foliar sprays of 100 p.p.m. streptocycline + 0.1% copper oxychloride on *X. c. pv. citri* infection of 6-year-old Kagzi lime was investigated in Maharashtra, India. Sprays were applied at intervals of 7, 15 and 21 d and the most cost effective chemical control was achieved by spraying at intervals of 7 or 15 d.

DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; Subtropical-fruits; chemical-control; plant-disease-control; limes-; economics-of-control; copper-oxychloride; control-; disease-control; fruit-crops; citrus-fruits; plant-pathology

OD: Citrus-aurantiifolia; citrus-; *Xanthomonas-campestris-pv.-citri*; bacteria-

GE: India-; Maharashtra-

ID: streptocycline

RN: 1332-40-7

BT: pathogens; bacteria; prokaryotes; plant-pathogens; copper-fungicides; fungicides; pesticides; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; Gracilicutes; Commonwealth-of-Nations; Developing-Countries; South-Asia; Asia; India

CC: FF600; EE140; EE145; HH400

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Input-Supply-Industries; Farm-Input-Utilization; Control-by-Chemicals-and-Drugs

PT: Journal-article

IS: 0367-973X

UD: 951216

AN: 952308622

Record 242 of 298 - CABPESTCD 1989-1999

TI: Efficient production of a synthetic periclinal chimera of citrus 'NF-5' for introduction of disease resistance.

AU: Ohtsu-Y

AD: Fruit Tree Research Station, Kuchinotsu Branch, Ministry of Agriculture, Forestry and Fisheries, Kuchinotsu, Nagasaki 859-25, Japan.

SO: Annals-of-the-Phytopathological-Society-of-Japan. 1994, 60: 1, 82-88; 17 ref.

PY: 1994

LA: English

LS: Japanese

AB: The connective part of hypocotyls of *Citrus natsudaoidai* cv. *Kawano-natsudaoidai* (moderately resistant to citrus tristeza closterovirus) and the orange cv. *Fukuhara* orange grafted together was cut horizontally. The hypocotyl of *Kawano-natsudaoidai* was further cut at an angle of 60° against the stem direction. The cut surface of the hypocotyls was treated with plant growth hormones and each treated hypocotyl was then covered with paraffin film and grown under light in the laboratory. A slowly-growing adventitious bud produced on the cut surface of *Kawano-natsudaoidai* near the border of the 2 cultivars was selected and grown in a greenhouse. A synthetic periclinal chimaera composed of germ layers II and III of *Kawano-natsudaoidai* (N) covered with layer I of *Fukuhara* orange (F) was easily obtained by treatment with a mixture of 50 µM gibberellin GA3, 1 µM 6-benzylaminopurine [benzyladenine] and 1 µM NAA. The name *Citrus natsudaoidai* + *sinensis* and the variety name 'NF-5' are proposed for this chimaera. The DHS (direct-hormone-slowly growing) technique makes it easy to introduce a tissue resistant to citrus canker (*Xanthomonas campestris* pv. *citri*) and CTV into layers II and III of citrus. A simple way to identify a variety of a tissue from layer II and III by HPLC was also established.

DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; subtropical-tree-fruits; disease-resistance; chimaeras-; oranges-; HPLC-; fruit-crops; plant-pathology; *natsudaoidais*-

OD: plant-viruses; citrus-; citrus-tristeza-closterovirus; *Xanthomonas-campestris-pv.-citri*; viruses-; *Citrus-natsudaoidai*; *Citrus-sinensis*; *Xanthomonas-campestris*; bacteria-

ID: Closterovirus

BT: pathogens; bacteria; prokaryotes; plant-pathogens; viruses; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; closterovirus-group; plant-viruses; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus
CC: FF600; FF020; HH600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Breeding-and-Genetics; Host-Resistance-and-Immunity
PT: Journal-article
IS: 0031-9473
UD: 951216
AN: 952300775

Record 243 of 298 - CABPESTCD 1989-1999

TI: Periclinal chimera of citrus resistant to citrus canker and citrus tristeza virus: chimerism and composition of fruit tissue in the synthetic periclinal chimeras 'FN-1' and 'NF-3'.
AU: Ohtsu-Y; Kuhara-S
AD: Fruit Tree Research Station, Kuchinotsu Branch, Ministry of Agriculture, Forestry and Fisheries, Kuchinotsu, Nagasaki 859-25, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1994, 60: 1, 20-26; 25 ref.
PY: 1994
LA: English
LS: Japanese
AB: Fruit tissues in these 2 chimaeras was quantitatively analysed with HPLC for 4 flavanone glycosides. The constitution of NF-1 was N-F-F for the 1st, 2nd and 3rd germ layers, respectively, where N resembled the chromatogram of cv. Kawano-natsudaikai and F that of Fukuhara orange. The constitution of NF-3 was F-N-N. The scientific names Citrus sinensis + natsudaikai for NF-1 and C. natsudaikai + sinensis for NF-3 are proposed and FN-1 is suggested as a new varietal name for NF-1. The proportions of the flavanone glycosides of the mother cultivars corresponded closely to the respective fruit tissues of FN-1 and NF-3. These results suggest that introducing tissue of a disease resistant cultivar to the 2nd and 3rd germ layers, and tissue of a high quality cultivar to the 1st layer, will make a chimaera tree with both disease resistance to canker [Xanthomonas campestris pv. citri] and citrus tristeza closterovirus, and high quality fruit.
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; disease-resistance; subtropical-tree-fruits; chimaeras-; HPLC-; fruit-crops; plant-pathology; oranges-; natsudaikais-
OD: plant-viruses; citrus-; Xanthomonas-campestris-pv.-citri; citrus-tristeza-closterovirus; viruses-; Citrus-sinensis; Citrus-natsudaikai; Xanthomonas-campestris; bacteria-
ID: Closterovirus
BT: pathogens; bacteria; prokaryotes; plant-pathogens; viruses; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; closterovirus-group; plant-viruses; Citrus
CC: FF600; FF020; HH600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Breeding-and-Genetics; Host-Resistance-and-Immunity
PT: Journal-article
IS: 0031-9473
UD: 951216
AN: 952300767

Record 244 of 298 - CABPESTCD 1989-1999

TI: Results of screening tests and applications of chemicals in controlling citrus canker.
OT: [Xanthomonas campestris pv. citri].
AU: Liu-S
SO: Plant-Quarantine-Shanghai. 1994, 8: 1, 13-14.
PY: 1994
LA: Chinese
DE: plant-diseases; plant-pathogens; plant-pathogenic-bacteria; subtropical-fruits; chemical-control;

plant-disease-control; control-; fruit-crops; plant-pathology
OD: citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
BT: pathogens; plant-pathogens; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600; HH400
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs
PT: Journal-article
UD: 951216
AN: 942309726

Record 245 of 298 - CABPESTCD 1989-1999

TI: The incidence of citrus canker *Xanthomonas citri* (Dowson) in Assam.
AU: Das-BC; Dubey-LN
AD: Citrus Research Station, Assam Agricultural University, Tinsukia, Assam, India.
SO: Journal-of-Research -Assam-Agricultural-University. 1989, 10: 1-2, 80-82; 8 ref.
PY: 1989
LA: English
AB: The incidence of severity of canker (*X. [campestris] pv. citri*) on 6 commonly grown Citrus spp. were recorded for both seedlings 4-5 yr old and fruit-bearing trees >10 yr old. In the older group, the disease was most severe on Kagzi lime (*C. aurantiifolia*), Rangpur lime (*C. limon*) and Assam lemon.
DE: lemons-; limes-; plant-pathogenic-bacteria; plant-pathology
OD: citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: India-; Assam-
BT: plant-pathogens; pathogens; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Developing-Countries; Commonwealth-of-Nations; South-Asia; Asia; India
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0258-1728
UD: 951216
AN: 942301395

Record 246 of 298 - CABPESTCD 1989-1999

TI: Notes on the present state of citrus canker.
OT: Notas de actualidad sobre el canker de los citricos.
AU: Valle-Valdes-N-del; Del-Valle-Valdes-N
AD: Estacion Experimental de Citricos, Jaguey Grande, Matanzas, Cuba.
SO: Centro-Agricola. 1988, 15: 2, 34-40, 56; 5 ref.
PY: 1988
LA: Spanish
LS: English
AB: This paper was presented at the International symposium on citrus canker (*Xanthomonas campestris* pv. *citri*) and blight disease held on 16-18 Jun. 1987 in Sao Paulo, Brazil.
DE: Plant-diseases
OD: Citrus-; Xanthomonas-campestris-pv.-citri
ID: International-symposium-on-citrus-canker-and-blight
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Conference-paper; Journal-article
UD: 951216
AN: 932340438

Record 247 of 298 - CABPESTCD 1989-1999

TI: Differential host range reaction of citrus and citrus relatives to citrus canker and citrus bacterial spot determined by leaf mesophyll susceptibility.

AU: Gottwald-TR; Graham-JH; Civerolo-EL; Barrett-HC; Hearn-CJ

AD: USDA, ARS, Orlando, FL 32803, USA.

SO: Plant-Disease. 1993, 77: 10, 1004-1009; 37 ref.

PY: 1993

LA: English

AB: The leaf mesophyll susceptibility of 54 citrus species, cultivars and relatives to *Xanthomonas campestris* pv. *citrumelo*, the cause of citrus bacterial spot, was evaluated in Hastings, Florida, USA, during 1989 and 1990. A similar host range of 53 citrus species, cultivars and relatives was tested in Beltsville, Maryland, USA, during 1991 to compare their differential susceptibility to *X. c. pv. citri*, which causes citrus canker, and to *X. c. pv. citrumelo* by inoculations on foliage of the same trees in replicated field plots. Field-grown trees were pruned to stimulate synchronous leaf flush for inoculation by a modified pinprick method. Lesion size at 60 d (Hastings plots) or 45 d (Beltsville plots) postinoculation was used to quantify leaf mesophyll susceptibility. For *X. c. pv. citrumelo* inoculations, lesion expansion was greatest on cultivars of trifoliolate orange hybrids (*Citrus paradisi* and *C. sinensis* X *Poncirus trifoliata*). Smaller lesions formed on Citrus species such as grapefruit, sweet orange, sour orange, mandarin, lemon and their hybrids, with the exception of Key lime, which developed lesions similar to those formed on trifoliolate hybrids. Susceptibility of most citrus types to *X. c. pv. citri* was more general. Lesion sizes resulting from pinprick inoculations with *X. c. pv. citri* were not significantly different among Citrus spp. and hybrids, indicating a general susceptibility of leaf mesophyll. Smaller lesions generally formed on citrus relatives, including some cultivars of trifoliolate orange. It is concluded that as pinprick inoculations cause wounds and open the leaf mesophyll to direct colonization by bacteria, this method bypasses stomatal infection and does not consider other factors that may affect field resistance.

DE: host-range; susceptibility-; disease-resistance; grapefruits-; oranges-; citrus-fruits; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Citrus-paradisi*; *Citrus-sinensis*; *Poncirus-trifoliata*;

Xanthomonas-campestris; bacteria-

GE: USA-; Florida-; Maryland-

ID: *Xanthomonas-campestris*-pv.-*citrumelo*

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; Citrus; *Poncirus*; North-America; America; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; Gulf-States-of-USA; Southeastern-States-of-USA

CC: FF600; HH600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 932340133

Record 248 of 298 - CABPESTCD 1989-1999

TI: Symposium on citrus canker and blight organized by the Institute of Biology of Sao Paulo on 16-19 Jun. 1987.

OT: Le symposium chancre citrique-blight organise par l'Institut Biologique de Saint Paul du 16 au 19 Juin 1987.

AU: Aubert-B

SO: Fruits. 1988, 43: 1, 49-58.

PY: 1988

LA: French

AB: The incidence, aetiology and control methods for citrus canker and blight in Florida (USA), Argentina, Brazil, Uruguay and Mexico, are outlined using information presented at the Symposium held in Sao Paulo, Brazil.

DE: Plant-diseases

OD: Citrus-

GE: America-

ID: Symposium-on-citrus-canker-and-blight
BT: Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Conference-paper; Journal-article
UD: 951216
AN: 932339459

Record 249 of 298 - CABPESTCD 1989-1999

TI: Citrus canker.
AU: Goto-M; Kumar-J (ed.); Chaube-HS (ed.); Singh-US (ed.); Mukhopadhyay-AN
AD: Faculty of Agriculture, Shizuoka University, 836 Ohya, Shizuoka, 422 Japan.
SO: Plant-diseases-of-international-importance.-Volume-III.-Diseases-of-fruit-crops. 1992, 170-208; 57 ref.
PB: Prentice Hall; Englewood Cliffs; USA
PY: 1992
LA: English
AB: The origin of citrus canker, its distribution and economic importance, symptoms, histopathology, aetiology (*Xanthomonas campestris* pv. *citri*), the host-pathogen interaction, disease cycle, survival of the pathogen, inoculation and disease rating, epidemiology, resistance, management and future prospects are reviewed.
DE: reviews-; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Miscellaneous
IB: 0-13-678566-2
UD: 951216
AN: 932334887

Record 250 of 298 - CABPESTCD 1989-1999

TI: Use of phages for identifying the citrus canker bacterium *Xanthomonas campestris* pv. *citri* in Taiwan.
AU: Wu-WC; Lee-ST; Kuo-HF; Wang-LY
AD: Graduate Institute of Plant Pathology, National Chung Hsing University, Taichung, 40277 Taiwan.
SO: Plant-Pathology. 1993, 42: 3, 389-395; 33 ref.
PY: 1993
LA: English
AB: Phages CP115 and CP122, isolated from canker lesions on grapefruit and Liucheng sweet orange, respectively, showed a high degree of specificity with respect to lysis of test bacterial strains. When used together, they lysed 135 of 138 *X. campestris* pv. *citri* strains isolated from the canker lesions on leaves, twigs and fruits of various citrus species, cultivars and hybrids grown throughout Taiwan, but they did not lyse other *X. campestris* pathovars and other phytopathogenic bacteria, nor other bacteria isolated from soil, clinical or environmental samples. Of 252 CP115/CP122-sensitive and 78 CP115/CP122-resistant bacterial strains with colony characteristics typical of, or similar to, those of *X. campestris* pv. *citri*, isolated from canker lesions of various citrus plants in different growing regions in Taiwan, 99.2% and 97.4% of the strains were pathogenic and non-pathogenic, respectively, when inoculated into Liucheng sweet orange or Mexican lime. It is concluded that the combined use of phages CP115 and CP122 is applicable for identifying *X. campestris* pv. *citri* in Taiwan.
DE: detection-; Grapefruits-; Oranges-; Techniques-; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteriophages-; bacteria-; *Citrus-paradisi*
GE: Taiwan-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; viruses; Citrus; South-East-Asia; Asia
CC: FF600; ZZ900
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article
IS: 0032-0862
UD: 951216
AN: 932333806

Record 251 of 298 - CABPESTCD 1989-1999

TI: Study on the integrated management of citrus canker.
AU: Fang-YM; Zhang-YX
AD: Agricultural Research Institute of Nanpin Prefecture, Fujian Province, China.
SO: Acta-Phytophylactica-Sinica. 1992, 19: 2, 101-105; 5 ref.
PY: 1992
LA: Chinese
LS: English
AB: In trials carried out during 1985-89, Jaoantong 14% AS provided good control of citrus canker, caused by *Xanthomonas campestris* pv. *citri*. Opt. control was achieved by spraying when the spring, summer and autumn shoots were 4-5, 6-7 and 5-6 cm long, respectively, and when the fruits had a diam. of 0.8-1.0, 1.8-2.0 and 2.8-3.0 cm. In seriously diseased orchards, a single control method was ineffective, but integrated management reduced mortality and increased yield and fruit quality.
DE: control-; disease-control; subtropical-fruits; citrus-fruits; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
ID: Jaoantong
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
UD: 951216
AN: 932332996

Record 252 of 298 - CABPESTCD 1989-1999

TI: Perceived vulnerability of citrus to canker in the major citrus growing areas of Australia.
AU: Broadbent-P
AD: NSW Agriculture, Biological and Chemical Research Institute, PMB 10, Rydalmere, NSW 2116, Australia.
SO: Australasian-Plant-Pathology. 1992, 21: 4, 158-162; 18 ref.
PY: 1992
LA: English
AB: *X. campestris* pv. *citri*, the cause of citrus canker, has not been detected in the major citrus growing areas of Australia, but recent isolated findings of canker A on Thursday Island (1984-85) and near Darwin (1990) have raised concerns about the vulnerability of citrus in the main citrus growing areas to the introduction of canker. An analysis of weather records indicate that, if introduced, canker could be serious at Gayndah in the Central Burnett area of Queensland and at Kulnura in coastal New South Wales. In the more arid areas of the Riverland (Loxton, Renmark), Sunraysia (Mildura) and the mid-Murray area of Kerang and the Murrumbidgee irrigation area (Griffith), a less favourable environment for canker development exists.
DE: environmental-factors; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Australia-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Australasia; Oceania
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0815-3191
UD: 951216

AN: 932332338

Record 253 of 298 - CABPESTCD 1989-1999

TI: Effect of carbon sources on antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.

AU: Masroor-MK; Sudhir-Chandra; Chandra-S

AD: Department of Botany, University of Allahabad, Allahabad 211 002, Uttar Pradesh, India.

SO: Philippine-Journal-of-Science. 1989, 118: 2, 141-145; 17 ref.

PY: 1989

LA: English

AB: A total of 28 carbon sources were assessed for their effects on the production of antibiotics by 3 species (*Aspergillus clavatus*, *A. flavus* and *A. niger*), antagonistic to the citrus canker pathogen (*Xanthomonas campestris* pv. *citri*). Each of the antagonists could utilize a range of C sources. Xylose was the most suitable source for antibiotic production by *A. niger*, L(+) arabinose for *A. flavus*, while L(+) rhamnose was best for *A. clavatus*. Glucose, fructose and mannose supported good antibiotic production as did the disaccharides apart from lactose. *A. clavatus* and *A. niger* were able to utilize trisaccharides, polysaccharides and alcohols. A number of organic acids failed to support antibiotic production by the antagonists.

DE: production-; antibiotics-; antagonists-; antagonism-; hosts-; plant-pathogenic-bacteria; plant-pathology

OD: *Aspergillus-flavus*; *Aspergillus-niger*; Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Aspergillus*-; bacteria-; *Aspergillus-clavatus*

ID: Hyphomycetes; mitosporic-fungi

BT: bacteria; prokaryotes; *Aspergillus*; Deuteromycotina; Eumycota; fungi; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; HH400; HH100; LL600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs; Biological-Control; Animal-Physiology-and-Biochemistry-Excluding-Nutrition

PT: Journal-article

IS: 0031-7683

UD: 951216

AN: 932327825

Record 254 of 298 - CABPESTCD 1989-1999

TI: Penetration through leaf stomata and growth of strains of *Xanthomonas campestris* in citrus cultivars varying in susceptibility to bacterial diseases.

AU: Graham-JH; Gottwald-TR; Riley-TD; Achor-D

AD: University of Florida, IFAS, Citrus Research and Education Center, Lake Alfred, FL 33850, USA.

SO: Phytopathology. 1992, 82: 11, 1319-1325; 28 ref.

PY: 1992

LA: English

AB: Leaf stomata and the pressures required to effect water congestion of tissue and bacterial penetration and growth in leaves were compared for selected cultivars of citrus species and relatives that vary in susceptibility to Asiatic citrus canker and citrus bacterial spot caused by *X. campestris* pv. *citri* and *X. c.* pv. *citrumelo*, respectively. The differences among cultivars in structure and density of stomata on leaves two thirds-expanded (most susceptible stage to infection) and leaves fully expanded (least susceptible) were not related to previously reported susceptibility to citrus canker. Leaves, two-thirds expanded, of citrus cultivars were inoculated with *X. c.* pv. *citri* or *X. c.* pv. *citrumelo* after pretreatment at 3 impact pressures to yield incipient water congestion of tissue, full congestion and congestion with damage to the epidermis. The number of lesions of canker and bacterial spot increased with degree of water congestion, but there was no interaction among cultivars with impact pressure. The number of bacteria that penetrated and the growth of either *X. c.* pv. *citri* or *X. c.* pv. *citrumelo* in leaves did not vary significantly among cultivars from 5 to 48 h. Populations continued to increase up to 168 h in cultivars susceptible to canker and in trifoliate orange and its hybrids susceptible to bacterial spot. After 48-72 h, populations of *X. c.* pv. *citri* were significantly lower in Cleopatra mandarin and in trifoliate orange, which are moderately resistant to citrus canker, and growth of *X. c.* pv. *citrumelo* ceased in citrus species that are highly resistant to citrus bacterial spot. The number of bacteria recovered from within the infiltrated area at 5 h corresponded with the number of lesions of canker and bacterial spot at 168 h, suggesting that individual lesions developed from infections of stomata. In

susceptible cultivars, lesion development was often correlated with bacterial populations at 168 h, but these factors were not correlated in cultivars resistant to bacterial spot. Thus, resistance of citrus leaf tissue was expressed not as reduction in the number of bacteria that penetrated through stomata, but as a reduction in bacterial growth after 72 h.

DE: varietal-reactions; infection-; resistance-; Disease-resistance; Mandarins-; Oranges-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; Xanthomonas-campestris-pv.-citri; Xanthomonas-campestris; bacteria-

ID: Xanthomonas-campestris-pv-citrumelo

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes

CC: FF600; HH600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Host-Resistance-and-Immunity

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 932327608

Record 255 of 298 - CABPESTCD 1989-1999

TI: New citrus cultivar 'Kousyun Ponkan'.

AU: Yoshida-T; Ueno-I; Shichijo-T; Yamada-Y; Kihara-T; Nishiura-M; Hidaka-T; Ito-Y; Nesumi-H; Iwasaki-T

AD: Okitsu Branch, Fruit Tree Research Station, Shimizu, Shizuoka 424-02, Japan.

SO: Bulletin-of-the-Fruit-Tree-Research-Station. 1991, No. 21, 67-74; 4 ref.

PY: 1991

LA: Japanese

LS: English

AB: The Citrus reticulata cv. Kousyun Ponkan, developed from a nucellar seedling, has vigorous trees with alternate bearing. It is resistant to citrus scab [*Elsinoe fawcettii*], citrus canker [*Xanthomonas campestris* pv. *citri*] and citrus tristeza closterovirus. The fruits weigh about 130 g and are oblate, with light-orange to orange, easy to peel rind. The flesh is juicy, light orange to orange, with a good flavour and 13% average soluble solids content. There are 5-15 polyembryonic seeds/fruit. The fruits mature in late December to mid-January.

DE: Mandarins-; Disease-resistance; varieties-; cultivars-; characteristics-; subtropical-fruits; citrus-fruits; fruit-crops

OD: *Elsinoe-fawcettii*; Xanthomonas-campestris-pv.-citri; Citrus-tristeza-closterovirus; Citrus-reticulata; Citrus-

GE: Japan-

ID: Kousyun-Ponkan

BT: *Elsinoe*; Dothideales; Ascomycotina; Eumycota; fungi; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; closterovirus-group; plant-viruses; viruses; Citrus; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; East-Asia; Asia

CC: FF020; HH600

CD: Plant-Breeding-and-Genetics; Host-Resistance-and-Immunity

PT: Journal-article

IS: 0385-2326

UD: 951216

AN: 931634415

Record 256 of 298 - CABPESTCD 1989-1999

TI: Compatability of fungicides and bactericide with insecticides in the control of citrus canker and leafminer in acidlime.

AU: Vekateswarlu-C; Ramapandu-S

AD: Citrus Improvement Project, S.V. Agril. College Campus, Tirupati-517 302, Andhra Pradesh, India.

SO: Indian-Journal-of-Plant-Protection. 1992, 20: 1, 27-31; 9 ref.

PY: 1992

LA: English

AB: Spraying fenvalerate followed by Bordeaux mixture after 3 days recorded least infestation (1.29%) of acidlime (Citrus) in Andhra Pradesh, India, with *Phyllocnistis citrella* in 1990, which was on a par with plots sprayed with

monocrotophos followed by Bordeaux mixture after 3 days, and streptomycin + tetracycline + copper oxychloride + fenvalerate. Plots sprayed with streptomycin + tetracycline + copper oxychloride recorded least intensity of canker (caused by *Xanthomonas campestris* pv. *citri*), followed by those treated with this mixture + fenvalerate. This mixture + fenvalerate was the most effective against both the phyllocnistid and canker.

DE: subtropical-fruits; insect-pests; fungicides-; bactericides-; pesticide-mixtures; monocrotophos-; fenvalerate-; control-; chemical-control; pest-control; disease-control; citrus-fruits; fruit-crops; agricultural-entomology

OD: Lepidoptera-; Phyllocnistidae-; Citrus-; Phyllocnistis-citrella; *Xanthomonas-campestris*-pv.-citri; arthropods-

GE: India-; Andhra-Pradesh

RN: 6923-22-4; 51630-58-1

BT: arthropod-pests; pests; animals; arthropods; invertebrates; insects; pesticides; organophosphate-insecticides; organophosphorus-insecticides; insecticides; pyrethroid-insecticides; Lepidoptera; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Phyllocnistis; Phyllocnistidae; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; bacteria; prokaryotes; South-Asia; Asia; India

CC: FF600; HH000; HH400

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Control-by-Chemicals-and-Drugs

PT: Journal-article

IS: 0253-4355

UD: 951216

AN: 921177114

Record 257 of 298 - CABPESTCD 1989-1999

TI: Spatial and spatiotemporal autocorrelation analysis of citrus canker epidemics in citrus nurseries and groves in Argentina.

AU: Gottwald-TR; Reynolds-KM; Campbell-CL; Timmer-LW

AD: USADA, ARS, Horticultural Research Laboratory, Orlando, FL, USA.

SO: Phytopathology. 1992, 82: 8, 843-851; 24 ref.

PY: 1992

LA: English

AB: Spatial and spatiotemporal (ST) patterns of citrus canker were examined in 3 nurseries and 2 groves in Argentina. The centre plant in each plot was inoculated with *Xanthomonas campestris* pv. *citri*, and disease was allowed to progress for 2 growing seasons. Disease assessments were made at about 21-d intervals. Final disease incidence was >90% in all 3 nurseries and reached 69 and 89% for orange (*Citrus sinensis*) and grapefruit (*C. X paradisi*) groves, respectively. For nursery plots, each quadrat was represented by disease counts, i.e., the number of diseased leaves, in a 6-plant row segment. For grove plots, each individual tree was considered a quadrat because of the large number of leaves per tree. Data from each assessment date were analysed by spatial correlation analysis and by ST autocorrelation analysis. Changes in significantly correlated spatial lags closely followed the changes in the disease progress curves for each plot. Proximity patterns in all 3 nurseries changed little during the first 3 to 4 assessments and then became more complex, often with noncontiguous elements that indicated the formation of secondary foci. Noncontiguous elements remained until the last few assessments, when they eroded and the proximity patterns generally became larger and contiguous as the numerous foci coalesced. Disease incidence increased more rapidly in the grove plots than in the nursery plots. Spatial proximity patterns of disease for the grapefruit grove plot, corresponding to assessment dates immediately after a rain-storm with highwinds, were elongated in a north-south direction. In contrast, spatial proximity patterns in the orange grove plot were more radially symmetrical until later in the epidemic, when they became more elongate in the north-south orientation and a few noncontiguous elements developed. ST autocorrelations and partial autocorrelations from the ST autocorrelation analysis of nurseries and groves were generally highest with a square proximity pattern. For citrus nurseries, ST autocorrelations and partial autocorrelations were consistent over time. ST autocorrelations decayed rapidly over spatial lags, but remained significant to 4 temporal lags. Therefore, the ST transfer function for citrus nurseries infected with citrus canker was represented by a ST autoregressive integrated moving-average (STARIMA) model, STARIMA(0,4,1,1). The ST partial autocorrelations were similar for both grove plots, indicating a similarity in the autoregressive components of each grove and, thus, a STARIMA model structure, but the 2 groves differed in inclusion of moving-average terms. For the orange grove, autocorrelations for the first temporal lag decayed slowly over the first 3 spatial lags, whereas the autocorrelation for the first temporal lag in the grapefruit grove decayed rapidly over spatial lags. Also, significant moving-average effects were estimated to

extend to 2 temporal lags in the grapefruit grove data but to only 1 in the orange grove data. Thus, STARIMA model forms for the orange and grapefruit groves were estimated to be STARIMA(0,1,4,1) and STARIMA(0,2,1,2), respectively.

DE: Oranges-; epidemiology-; models-; Grapefruits-; Techniques-; plant-pathogenic-bacteria; plant-pathology

OD: Xanthomonas-campestris-pv.-citri; Citrus-; bacteria-; Citrus-paradisi

GE: Argentina-

BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; South-America; America

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 922325398

Record 258 of 298 - CABPESTCD 1989-1999

TI: Asiatic citrus canker detected in a pummelo orchard in Northern Australia.

AU: Broadbent-P; Fahy-PC; Gillings-MR; Bradley-JK; Barnes-D

AD: NSW Agriculture, Biological & Chemical Research Institute, PMB 10, Rydalmere, NT 2116, Australia.

SO: Plant-Disease. 1992, 76: 8, 824-829; 21 ref.

PY: 1992

LA: English

AB: Raised, roughly circular, corky scabs 4-5 mm in diam. and typical of citrus canker were observed on spring flush leaves, twigs and fruits of pummelos (*Citrus grandis* [C. maxima]) in a young orchard near Darwin, Northern Territory, Australia, during a survey conducted in 1991 as part of the Northern Australia Quarantine Strategy. The causal agent was identified as *Xanthomonas campestris* pv. *citri* (Asiatic group, or group A), using pathogenicity in a series of hosts, fatty acid profiles and DNA fingerprints. The 10 strains from Darwin were compared with 2 previously identified strains of *X. c.* pv. *citri* (group A) from a canker outbreak (which has since been eradicated) on Thursday Island in the Torres Strait. Symptoms on inoculated leaves of sweet orange, West Indian lime, sour orange, and Duncan grapefruit included lesions of eruptive, callus-like white tissue and were produced by all strains. Lesions were larger and more erumpent on seedlings or detached leaves of West Indian lime, sweet orange and Duncan grapefruit. On citrange C-35 (*Poncirus trifoliata*X*C. sinensis*) leaves, callus-like lesions were produced by Thursday Island strains, and small, light tan, necrotic areas were produced by the Darwin strains. The fatty acid profiles of the Thursday Island strains were similar to a library generated from the fatty acid profiles of the Darwin strains (with similarity indices of 0.610 and 0.810). All Darwin strains had identical DNA restriction patterns, which were similar (with a similarity coeff. of 94%) but not identical to those produced from the reference Thursday Island strains. It is concluded that the canker outbreak near Darwin was caused by *X. c.* pv. *citri* (group A). All citrus trees within the diseased orchard were destroyed and no further outbreaks have been detected.

DE: strains-; Pummelos-; DNA-fingerprinting; detection-; biotechnology-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-; Citrus-maxima

GE: NORTHERN-TERRITORY; Australia-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Citrus; Australia; Australasia; Oceania

CC: FF600; WW000; FF020

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biotechnology; Plant-Breeding-and-Genetics

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 922322395

Record 259 of 298 - CABPESTCD 1989-1999

TI: Sample outline for a survey of citrus canker in the State of Sao Paulo.

OT: Delineamento amostral para levantamento de cancro citrico no Estado de Sao Paulo.

AU: Pino-FA; Igue-T; Amaro-AA

AD: Instituto de Economia Agricola (IEA), Sao Paulo, SP, Brazil.

SO: Agricultura-em-Sao-Paulo. 1990, 37: 3, 61-71; 5 tab.; 5 ref.

PY: 1990

LA: Portuguese

LS: English

AB: A sampling method is presented for detecting plant disease and its application to the case of canker in citrus (*Xanthomonas campestris* pv. *citri*) in Sao Paulo, Brazil, is detailed. It aims at finding the largest number possible of foci of the disease. In the first stage, producing farms were selected at random, while in the second, the plants were also selected at random within the farms. The proportion of diseased plants in relation to the total number of plants was estimated. For the case of citrus canker, all properties were surveyed and the selection of cultivars was proportional to its susceptibility to the disease. The cost of inspecting each tree increased slightly as the sampling fraction became smaller because more walking to the next tree was involved, but this increase in cost was fully compensated by the increase in the number of trees covered in the survey. It is hoped that this method will reduce costs. It was recommended that all seedling nurseries be inspected; that farms where a focus of the disease is detected be re-inspected in the succeeding years; and that inspections be carried out at the same time of the year when the symptoms are easier to detect.

DE: Plant-diseases; Citrus-fruits; cankers-; sampling-; disease-control; Techniques-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-

GE: Brazil-; Sao-Paulo

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America; Brazil

CC: EE145; FF600; HH000; ZZ900

CD: Farm-Input-Utilization; Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Techniques-and-Methodology

PT: Journal-article

UD: 951216

AN: 921897101

Record 260 of 298 - CABPESTCD 1989-1999

TI: Susceptibility of citrus fruit to bacterial spot and citrus canker.

AU: Graham-JH; Gottwald-TR; Riley-TD; Bruce-MA

AD: Research and Education Center, 700 Experiment Station Road, Lake Alfred, FL 33850, USA.

SO: Phytopathology. 1992, 82: 4, 452-457; 16 ref.

PY: 1992

LA: English

AB: A pressurized spray (1 g/mm²) that water-soaked the rind of citrus fruit was used to obtain infection by *Xanthomonas campestris* pv. *citri*, *X. c.* pv. *citrumelo* and other *X. campestris* pathovars capable of infecting leaves of the citrus hybrid Swingle citrumelo (*Poncirus trifoliata* X *Citrus paradisi*). An aggressive strain of *X. c.* pv. *citrumelo* readily infected fruit 20-40 mm in diameter, but fruit of smaller and larger diameters were not as susceptible. Marsh White and Marsh Red grapefruit cultivars developed larger lesions over a wider range of fruit sizes compared with Hamlin and Valencia sweet orange and Orlando tangelo. After 28 days, lesions caused by *X. c.* pv. *citrumelo* strains did not expand further into rind tissues. Resistance of fruit to several strains of *X. c.* pv. *citrumelo* and other pathovars of *X. campestris*, both of which produced small, discrete lesions, was confirmed by the inability of these strains to multiply in the rind tissue of Marsh White grapefruit. Nearly all strains of *X. c.* pv. *citrumelo* were also incapable of sustaining growth and lesion expansion in leaf tissue of Ruby Red grapefruit and Swingle citrumelo; exceptions were aggressive strains, which produced expanding lesions on Swingle citrumelo. The relationship between fruit size and infection of citrus fruit cultivars by an Asiatic strain of *X. c.* pv. *citri* was similar to that for *X. c.* pv. *citrumelo*. Red Blush grapefruit was more susceptible to Asiatic citrus canker than Hamlin sweet orange, whereas Capurro mandarin was resistant. Unlike lesions produced by *X. c.* pv. *citrumelo*, canker lesions continued to expand up to 106 days after inoculation of fruit 20-40 mm in diameter. Lesions did not expand on fruit >60 mm in diameter.

DE: susceptibility-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Xanthomonas-campestris*; bacteria-

ID: *Xanthomonas-campestris*-pv-citrumelo
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0031-949X
UD: 951216
AN: 922320872

Record 261 of 298 - CABPESTCD 1989-1999

TI: An *Xanthomonas citri* pathogenicity gene, *pthA*, pleiotropically encodes gratuitous avirulence on nonhosts.
AU: Swarup-S; Yang-Y; Kingsley-MT; Gabriel-DW
AD: Plant Pathology Department, University of Florida, Gainesville, FL 32611, USA.
SO: Molecular-Plant-Microbe-Interactions. 1992, 5: 3, 204-213; 54 ref.
PY: 1992
LA: English
AB: The pathogenicity gene, *pthA*, of *X. [campestris pv.] citri* is required to elicit symptoms of Asiatic citrus canker disease; introduction of *pthA* into *Xanthomonas* strains that are mildly pathogenic or opportunistic on citrus confers the ability to induce cankers on citrus. The structure and the function of *pthA* in other xanthomonads and in *X. c. pv. citri* were further investigated. When *pthA* was introduced into strains of *X. c. pv. phaseoli* and *X. c. pv. malvacearum* (neither pathogenic to citrus), the transconjugants remained non-pathogenic to citrus and elicited a hypersensitive response (HR) on their respective hosts, bean (*Phaseolus vulgaris*) and cotton. In *X. c. pv. malvacearum*, *pthA* conferred cultivar-specific avirulence. Structurally, *pthA* is highly similar to *avrBs3* and *avrBsP* from *X. c. pv. vesicatoria* and to *avrB4*, *avrb6*, *avrb7*, *avrBIn*, *avrB101* and *avrB102* from *X. c. pv. malvacearum*. Surprisingly, marker-exchanged *pthA::Tn5-gusA* mutant B21.2 of *X. c. pv. citri* specifically lost the ability to induce the nonhost HR on bean, but retained the ability to induce the nonhost HR on cotton. The loss of the ability of B21.2 to elicit on bean was restored by introduction of cloned *pthA*, indicating that the genetics of the nonhost HR may be the same as that found in homologous interactions involving specific *avr* genes. In contrast with expectations of homologous HR reactions, however, elimination of *pthA* function (resulting in loss of HR) did not result in water-soaking or even moderate levels of growth in planta of *X. c. pv. citri* on bean; the nonhost HR, therefore, may not be responsible for the "resistance" of bean to *X. c. pv. citri* and may not limit the host range of *X. c. pv. citri* on bean. The pleiotropic avirulence function of *pthA* and the heterologous HR of bean to *X. c. pv. citri* are both evidently gratuitous.
DE: Biotechnology-; Molecular-genetics; pathogenicity-; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris*-pv.-citri; bacteria-
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes
CC: FF600; WW000; FF020
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biotechnology; Plant-Breeding-and-Genetics
PT: Journal-article
IS: 0894-0282
UD: 951216
AN: 922320855

Record 262 of 298 - CABPESTCD 1989-1999

TI: Antimicrobial activity of catechins against plant pathogenic bacteria and fungi.
AU: Kodama-K; Sagesaka-Y; Goto-M
AD: Central Research Institute, Ito-en, Ltd., 21 Mekami, Sagara-cho, Haibara-gun, Shizuoka 421-05, Japan.
SO: Annals-of-the-Phytopathological-Society-of-Japan. 1991, 57: 3, 306-311; 8 ref.
PY: 1991
LA: Japanese
LS: English
AB: (-)Epicatechin gallate and (-)epigallocatechin gallate were highly inhibitory to *Pseudomonas syringae* pv. *lachrymans*, *P. solanacearum*, *Xanthomonas campestris* pv. *citri* and *X. campestris* pv. *vesicatoria*. Methylated

(-)-epigallocatechin gallate was not active against these bacteria but specifically inhibited the growth of *Pyricularia oryzae*. In inoculation tests crude catechins effectively prevented the development of bacterial leaf spot of tomato caused by *X. campestris* pv. *vesicatoria* and citrus canker caused by *X. campestris* pv. *citri*, their effectiveness being comparable to that of a wettable copper compound (Doitsu Borudou-A). These results suggest that tea catechins may be useful in the control of some bacterial plant diseases.

DE: FLAVANOLS-; control-; plant-pathogens; Tomatoes-; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-*vesicatoria*; Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-;

Lycopersicon-esculentum

BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Lycopersicon*; *Solanaceae*; *Solanales*

CC: FF600; HH400; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Control-by-Chemicals-and-Drugs;

Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

IS: 0031-9473

UD: 951216

AN: 922319637

Record 263 of 298 - CABPESTCD 1989-1999

TI: Analysis of foci of Asiatic citrus canker in a Florida citrus orchard.

AU: Gottwald-TR; Graham-JH; Egel-DS

AD: USDA-ARS, Orlando, FL 32803, USA.

SO: Plant-Disease. 1992, 76: 4, 389-396; 24 ref.

PY: 1992

LA: English

AB: In Oct. 1990, the occurrence of Asiatic citrus canker in an orange orchard in south Florida was apparently related to spread of *Xanthomonas campestris* pv. *citri* from dooryard trees (lemons and citrumelo) 230 m away on an adjacent property. The establishment of the initial foci of disease in the orchard coincided temporally with a major rainstorm with high winds during mid-Aug. 1989, whilst infection of the dooryard trees was related by regulatory officials to an outbreak of *X. campestris* pv. *citri* on the west coast of Florida in 1986. Restriction endonuclease digest patterns of DNA taken from the pathogens during the 1986 and 1990 outbreaks were identical. There were 3 extensive and several minor areas of diseased trees in the orchard. The 3 most extensive areas of disease each had trees near the center of the cluster with stem lesions that predated all other foliar lesions in the cluster. From isopath maps of these areas a main focus of diseased trees was found, surrounded by what appeared to be secondary foci. A greater within-row than across-row aggregation for each area was detected by ordinary runs analyses. A predominant direction of disease spread among the areas of diseased trees was not found in analysis of disease gradients. A slightly stronger association of diseased trees within than across rows was found in spatial lag autocorrelation analyses, but noncontiguous groups of diseased trees also occurred that coincided with secondary foci at oblique angles to the oldest diseased trees. If natural spread within the orchard did occur, it may have been confounded by mechanical spread of *X. c.* pv. *citri* caused by orchard management practices, such as pesticide applications.

DE: spread-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-

GE: Florida-; USA-

BT: bacteria; prokaryotes; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 922318228

Record 264 of 298 - CABPESTCD 1989-1999

TI: Successful eradication of citrus canker from Thursday Island.

AU: Jones-DR

AD: Plant Pathology Branch, Queensland Department of Primary Industries, Meiers Road, Indooroopilly, Qld 4068, Australia.

SO: Australasian-Plant-Pathology. 1991, 20: 3, 89-91; 7 ref.

PY: 1991

LA: English

AB: A campaign to eradicate citrus canker from Thursday Island, Queensland, Australia, was initiated in 1984 following the detection of *Xanthomonas* [campestris pv.] citri. A total of 10 citrus trees were found with symptoms of the disease over a 2-year period. No symptoms of citrus canker have been observed since Feb. 1986, and the disease was declared eradicated in Sep. 1988.

DE: control-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Queensland-; Australia-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Australia; Australasia; Oceania

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

IS: 0815-3191

UD: 951216

AN: 922318110

Record 265 of 298 - CABPESTCD 1989-1999

TI: Evaluation of bactericides for control of citrus canker in Argentina.

AU: Timmer-LW

AD: University of Florida, IFAS Citrus Research and Education Center, 700 Experiment Station Road, Lake Alfred, FL 33850, USA.

SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1988, publ. 1989, 101: 6-9; 12 ref.

PY: 1988

LA: English

AB: The bactericides copper hydroxide, copper ammonium carbonate (CAC), copper oxychloride + kasugamycin, fosetyl-Al, Agrishield and GLC-719 were compared in sweet orange cv. Pineapple nursery plots for control of the Asiatic type citrus canker caused by *Xanthomonas campestris* pv. citri (Xcc-A). All products significantly reduced the number of lesions per leaf, but the copper bactericides were the most effective. None of the individual products tested significantly reduced epiphytic populations of Xcc-A below those of the control, but copper bactericides reduced populations more than non-copper materials. In another test on Pineapple sweet orange seedlings, rates of CAC from 0 to 64 ml/litre were compared. Application of CAC at 4 to 8 ml/litre or more to existing foliage reduced the lesion numbers on subsequent growth flushes. Populations of Xcc-A on the new growth flush were generally reduced when previously existing flushes had been treated, but only if measured soon after treatment. In a field test on mature grapefruit trees, 3 applications per season of CAC or copper hydroxide + maneb reduced lesion numbers on fruit but not on leaves. In this test, lesion numbers were higher on the side of the tree and on those plots exposed to the wind. It is concluded that copper bactericides are still the most effective materials for canker control and have the potential to reduce inoculum as well as reducing infection. This paper was presented at the 101st annual meeting of the Florida State Horticultural Society held in Miami, Florida, USA on 1-3 Nov., 1988.

DE: control-; Oranges-; Copper-; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Argentina-

ID: Florida-State-Horticultural-Society

RN: 7440-50-8

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;

Xanthomonas-campestris; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Conference-paper; Journal-article
IS: 0886-7283
UD: 951216
AN: 922315590

Record 266 of 298 - CABPESTCD 1989-1999

TI: Citrus canker in Kerman Province.
AU: Alizadeh-A; Rahimian-H
AD: Jihade Sazandegi Education Centre and College of Agriculture, Mazandaran University, Sari, Iran.
SO: Iranian-Journal-of-Plant-Pathology. 1990, 26: 1-4, 42 (En), 118 (Pe).
PY: 1990
LA: English, Persian
AB: The report of *Xanthomonas campestris* pv. *citri* on Mexican lime (*Citrus aurantiifolia*) in Kahnouj in 1989 is a new record for Iran.
DE: Limes-; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris*-pv.-*citri*; bacteria-; Citrus-
GE: Iran-
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; West-Asia; Asia; Middle-East
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0006-2774
UD: 951216
AN: 922317497

Record 267 of 298 - CABPESTCD 1989-1999

Record deleted, not about Xac

Record 268 of 298 - CABPESTCD 1989-1999

TI: Study of biochemical and physiological variability in *Xanthomonas campestris* pv. *citri*, causal agent of bacterial citrus canker.
OT: Etude de la variabilite biochimique et physiologique de *Xanthomonas campestris* pv. *citri*, agent du chancre bacterien des agrumes.
AU: Verniere-C; Devaux-M; Pruvost-O; Couteau-A; Luisetti-J
AD: IRFA/CIRAD, Laboratoire de Phytopathologie, BP 180, 97455 Saint Pierre Cedex, Ile de la Reunion.
SO: Fruits-Paris. 1991, 46: 2, 153-161; 53 ref.
PY: 1991
LA: French
LS: Spanish
AB: *X. c.* pv. *citri* strains (22) belonging to pathovars A, B, C, D (Citrus canker) and E (Citrus bacterial spot (CBS)) were studied for their biochemical and physiological characteristics and their profiles of assimilation of 147 carbohydrate substrates. Mevag medium showed oxidative glucose metabolism significantly better than the commonly used Hugh and Leifson medium. Based on hydrolysis of gelatin and casein and tolerance of NaCl, the strains were divided into 3 groups. A homogeneous assimilation spectrum was observed for 116 carbohydrate substrates. Strains of A and CBS pathotypes were differentiated from B, C and D types based on their assimilation of maltose, amidon and glycogen. Strains of the pathotypes B and D showed similar assimilation profiles. Strains of pathotype C were different from all others by the characters of D-alpha alanine and L-serine.
DE: biochemistry-; physiology-; strains-; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
BT: bacteria; prokaryotes; *Rutaceae*; *Sapindales*; *dicotyledons*; *angiosperms*; *Spermatophyta*; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*
CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0248-1294
UD: 951216
AN: 922315887

Record 269 of 298 - CABPESTCD 1989-1999

TI: Research relating to the recent outbreak of citrus canker in Florida.
AU: Stall-RE; Civerolo-EL
AD: Department of Plant Pathology, University of Florida, Gainesville, FL 32611, USA.
SO: Annual-Review-of-Phytopathology. 1991, 29: 399-420; 73 ref.
PY: 1991
LA: English
AB: The research on the recent (since 1982) outbreak of citrus canker in Florida, USA, caused by strains of *Xanthomonas campestris* pv. *citri*, is reviewed. Comparisons are made between canker and bacterial spot (*X. c.* pv. *citrumelo*) and the serology and classification of *Xanthomonas* strains from citrus are discussed.
DE: strains-; reviews-; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Xanthomonas*-; bacteria-
GE: Florida-; USA-
ID: *Xanthomonas-campestris*-pv.-*citrumelo*
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0066-4286
UD: 951216
AN: 922315676

Record 270 of 298 - CABPESTCD 1989-1999

TI: Research perspectives on eradication of citrus bacterial diseases in Florida.
AU: Graham-JH; Gottwald-TR
AD: Citrus Research and Education Center, University of Florida, IFAS, 700 Experiment Station Road, Lake Alfred, FL 33850, USA.
SO: Plant-Disease. 1991, 75: 12, 1193-1200; 33 ref.
PY: 1991
LA: English
AB: The problems of citrus canker caused by *Xanthomonas campestris* pv. *citrumelo* and *X. c.* pv. *citri* in Florida, USA, are discussed under the headings: methods for detection and identification, comparison of *X. c.* pv. *citrumelo* and *X. c.* pv. *citri*; epidemiology in nurseries and orchards; susceptibility of foliage and fruit; control measures; and significance of research and the current situation.
DE: plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Florida-; USA-
ID: *Xanthomonas-campestris*-pv.-*citrumelo*
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0191-2917
UD: 951216

AN: 922315215

Record 271 of 298 - CABPESTCD 1989-1999

TI: Analysis of *Xanthomonas campestris* pv. *citri* and *X. c. citrumelo* with monoclonal antibodies.

AU: Alvarez-AM; Benedict-AA; Mizumoto-CY; Pollard-LW; Civerolo-EL

AD: Department of Plant Pathology, University of Hawaii, Honolulu, HI 96822, USA.

SO: Phytopathology. 1991, 81: 8, 857-865; 30 ref.

PY: 1991

LA: English

AB: A monoclonal antibody (MAb), designated A1, reacted with lipopolysaccharide (LPS) epitopes of all tested strains of *X. campestris* pv. *citri* isolated from the Asiatic form of citrus bacterial canker (CVC-A), with *X. campestris* strains pathogenic on *Cordyline terminalis* [*C. fruticosa*], and with some Florida citrus nursery strains associated with citrus bacterial spot (CBS) disease (*C. c. pv. citrumelo*). The A1 MAb did not react with strains associated with other forms of citrus canker (B, C or D). Except for weak reactions with *X. c. pv. manihotis*, MAb A1 did not react with 130 other *Xanthomonas* pathovars and species or with 89 strains of other genera. In contrast, the titres of a rabbit-anti-CBC-A antiserum with several other *X. campestris* pathovars were as high as titres with some CBC-A strains. A second MAb, A2, reacted only with a flagellar epitope associated with CP1 bacteriophage-sensitive CBC-A strains. The CBC-B strains appeared to be antigenically heterogeneous, because no MAb was produced that reacted with all CBC-B strains; however, the CBC-B strains were grouped by reactions to 3 MAbs specific for LPS epitopes. One CBC-B MAb, B2, indicated a close antigenic relationship between strains in groups B, C and D. Another MAb, C1 specific for CBC-C strain XC70 reacted with a heat-sensitive epitope associated with a molecule partially sensitive to proteolytic enzymes. MAbs (T1 and T2) specific for weakly virulent strains isolated in Mexico from *Citrus aurantifolia* (Mexican lime) did not react with any other strains from citrus. CBS strains from Florida were serologically heterogeneous but distinct from strains associated with CBC. Most of the strongly aggressive CBS strains reacted with a MAb (CBS1) generated to a strongly aggressive strain, whereas most moderately and weakly aggressive strains reacted with MAb Xct generated to a *X. campestris* pathogen of *C. fruticosa*. Moderately to weakly aggressive CBS strains reacted with MAb A1, but those strains also reacted with MAb Xct, whereas CBC-A strains did not. The LPS banding patterns of CBC-A strains were similar to each other, with major bands at an av. Mr of 80 000 and were distinguished from the LPS patterns of A1-positive CBS, *C. fruticosa* and *X. c. pv. manihotis* strains (major bands at an av. Mr of 60 000).

DE: Biotechnology-; serology-; strains-; Techniques-; differentiation-; Monoclonal-antibodies; serological-relationships; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-

ID: *Xanthomonas-campestris*-pv.-*citrumelo*

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; WW000; ZZ900; FF020

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biotechnology; Techniques-and-Methodology; Plant-Breeding-and-Genetics

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 912312462

Record 272 of 298 - CABPESTCD 1989-1999

TI: Effect of bacteriophage, certain antibiotics and fungicides on *Xanthomonas campestris* pv. *citri* and citrus canker.

AU: Reddy-CVR; Ramanujam-K; Prasad-NN; Ramabadram-R; Gnanamanickam-SS (ed.); Mahadevar-A

AD: Department of Plant Pathology, Faculty of Agriculture, Annamalai University, Annamalaiagar, India.

SO: Advances in research on plant pathogenic bacteria based on the proceedings of the National Symposium on Phytobacteriology held at the University of Madras, Madras, India during March 14-15, 1986. 1988, 133-137; 8 ref.

PB: Today & Tomorrow's Printers & Publishers; New Delhi; India

PY: 1988

LA: English

AB: A bacteriophage causing lysis of *Xanthomonas campestris* pv. *citri* was isolated from cankerous leaves of *Citrus aurantifolia* and the effect of the bacteriophage on infection by the canker bacterium was studied. Although the infection index was slightly less in the case of citrus plants treated with bacteriophage followed by the bacterium, compared with plants treated simultaneously with phage and bacterium and plants inoculated with bacterium alone, the differences were not significant. The effects of various antibiotics are discussed together with the action of fungicides.

DE: Limes-; control-; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-*citri*; bacteriophages-; Citrus-; bacteria-

ID: National-symposium-on-phytobacteriology

BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; viruses; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Conference-paper

IB: 81-7019-305-2

UD: 951216

AN: 912312646

Record 273 of 298 - CABPESTCD 1989-1999

TI: Effect of C/N ratio on antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.

AU: Masroor-MK; Sudhir-Chandra; Chandra-S

AD: Department of Botany, University of Allahabad, Allahabad 211 002, India.

SO: National-Academy-Science-Letters. 1989, 12: 5, 145-147; 9 ref.

PY: 1989

LA: English

AB: The C/N ratio in the medium affected the production of antibiotics by *A. clavatus*, *A. flavus* and *A. niger* antagonistic to *Xanthomonas campestris* pv. *citri*.

DE: production-; antibiotics-; antagonists-; hosts-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Aspergillus-niger*; *Aspergillus-flavus*; Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-;

Aspergillus-clavatus

ID: Hyphomycetes; mitosporic-fungi

BT: bacteria; prokaryotes; *Aspergillus*; Deuteromycotina; Eumycota; fungi; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; HH100

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control

PT: Journal-article

IS: 0250-541X

UD: 951216

AN: 912312584

Record 274 of 298 - CABPESTCD 1989-1999

TI: Effect of amino acids on antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.

AU: Masroor-MK; Sudhir-Chandra; Chandra-S

AD: Department of Botany, University of Allahabad, Allahabad 211 002, Uttar Pradesh, India.

SO: Philippine-Journal-of-Science. 1990, 119: 2, 165-170; 25 ref.

PY: 1990

LA: English

AB: Asparagine, followed by glutamine, proline, alanine, glycine, isoleucine, valine, glutamic acid, arginine and peptone, proved to be good sources for antibiotic production in *A. clavatus*, *A. flavus* and *A. niger*, antagonists of *Xanthomonas campestris* pv. *citri*.

DE: antagonists-; antagonism-; production-; antibiotics-; Culture-techniques; hosts-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Aspergillus-flavus*; *Aspergillus-niger*; *Aspergillus*-; bacteria-; *Aspergillus-clavatus*

ID: Hyphomycetes; mitosporic-fungi
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Aspergillus; Deuteromycotina;
Eumycota; fungi
CC: FF600; HH100; LL030
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control;
Culture-of-other-Invertebrates-Not-Aquaculture
PT: Journal-article
IS: 0031-7683
UD: 951216
AN: 912312042

Record 275 of 298 - CABPESTCD 1989-1999

TI: A modified medium for antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.
AU: Masroor-MK; Sudhir-Chandra; Chandra-S
AD: Department of Botany, University of Allahabad, Allahabad 211 002, India.
SO: National-Academy-Science-Letters. 1989, 12: 4, 103-106; 6 ref.
PY: 1989
LA: English
AB: In order to select a medium which could be used to obtain highly active culture filtrate, *A. clavatus*, *A. flavus* and *A. niger* (active against *Xanthomonas campestris* pv. *citri*) were grown on modifications of Czapek liquid medium. Czapek liquid medium containing glucose in place of sucrose, potassium nitrate in place of sodium nitrate and L-cystine in place of magnesium sulfate supported good growth and sporulation of the antagonists and favoured antibiotic production.
DE: antagonism-; production-; antibiotics-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: *Xanthomonas-campestris*-pv.-*citri*; *Aspergillus-flavus*; *Aspergillus-niger*; *Aspergillus*-; bacteria-;
Aspergillus-clavatus
ID: Hyphomycetes; mitosporic-fungi
BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Aspergillus*;
Deuteromycotina; *Eumycota*; fungi
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0250-541X
UD: 951216
AN: 912311628

Record 276 of 298 - CABPESTCD 1989-1999

TI: Role of inorganic nitrogen sources on antibiotic production by *Aspergillus* spp. antagonistic to citrus canker pathogen.
AU: Masroor-MK; Sudhir-Chandra; Chandra-S
AD: Department of Botany, University of Allahabad, Allahabad 211 002, India.
SO: National-Academy-Science-Letters. 1989, 12: 2, 43-45; 7 ref.
PY: 1989
LA: English
AB: Among 14 inorganic N compounds tested for their effect on antibiotic production by *A. clavatus*, *A. flavus* and *A. niger*, against *Xanthomonas campestris* pv. *citri*, ammonium salts were the most favourable while nitrites failed to support antibiotic production.
DE: production-; antibiotics-; antagonists-; antagonism-; hosts-; fruit-crops; plant-pathogenic-bacteria;
plant-pathology
OD: *Aspergillus-flavus*; *Aspergillus-niger*; Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Aspergillus*-; bacteria-;
Aspergillus-clavatus
ID: Hyphomycetes; mitosporic-fungi
BT: bacteria; prokaryotes; *Aspergillus*; *Deuteromycotina*; *Eumycota*; fungi; Rutaceae; Sapindales; dicotyledons;

angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600; HH100
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Biological-Control
PT: Journal-article
IS: 0250-541X
UD: 951216
AN: 912311221

Record 277 of 298 - CABPESTCD 1989-1999

TI: Citrus canker. Prevention and control in the State of Parana.
OT: Cancro citrico. Prevencao e controle no Parana.
AU: Leite-RP Jr.
AD: Fundacao IAPAR, C.P. 1331, 86001 Londrina, PR, Brazil.
SO: Circular -Instituto-Agronomico-do-Parana. 1990, No. 61, 51 pp.; 74 ref.
PY: 1990
LA: Portuguese
LS: English
AB: Xanthomonas campestris pv. citri does not survive for long periods in the soil, in association with non-host plants or in plant debris. Thus, it may be possible to eradicate it locally within a short time. The citrus cultivars evaluated showed different levels of resistance. Copper-based bactericides and windbreak trees can significantly reduce the development of the disease. A programme for integrated citrus canker management was developed for locally eradicating the disease in the State of Parana, Brazil.
DE: integrated-control; disease-control; shelterbelts-; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: Parana-; Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Brazil; South-America; America
CC: FF600; HH000; KK140
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General; Protection-Forestry
PT: Miscellaneous
UD: 951216
AN: 912311081

Record 278 of 298 - CABPESTCD 1989-1999

TI: Population dynamics of strains of Xanthomonas campestris differing in aggressiveness on Swingle citrumelo and grapefruit.
AU: Egel-DS; Graham-JH; Riley-TD
AD: University of Florida, IFAS, Citrus Research and Education Center, 700 Experiment Station Road, Lake Alfred, FL 33850, USA.
SO: Phytopathology. 1991, 81: 6, 666-671; 27 ref.
PY: 1991
LA: English
AB: The aggressiveness of strains of X. campestris causing citrus canker (X. c. pv. citri) and citrus bacterial spot (X. c. pv. citrumelo) on Swingle citrumelo and Duncan grapefruit was assessed by comparing lesion expansion and population development for these strains in greenhouse, growth chamber, and field experiments, using different inoculation techniques and sampling methods. When leaves were pinprick inoculated and resultant lesions sampled over time, there was a positive relationship between populations (detected upon macerating lesions) and external populations (detected by swabbing the surface of moist lesions) and between each population and lesion diameter for the different pathovars and aggressiveness types of X. c. pv. citrumelo. Correlations among internal and external populations and lesion diameter were higher in the field than under dew-forming conditions in the growth chamber. A leaf-infiltration method revealed few differences in internal populations among pathovars and strains. Strain X host interactions based on the populations and expansion of lesions were apparent for the different aggressiveness

types of *X. c. pv. citrumelo* in the field. The highly aggressive strain of *X. c. pv. citrumelo* on Swingle citrumelo most consistently produced the highest bacterial populations and largest lesions. In the field, internal populations were indicative of external populations and therefore might be predictive of the ability of a strain of *X. campestris* to spread on a given host.

DE: Citrumelos-; population-dynamics; strains-; Grapefruits-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris-pv.-citri*; Citrus-; bacteria-; Citrus-paradisi

ID: *Xanthomonas-campestris-pv-citrumelo*; Citrus-paradisi-X-Poncirus-trifoliata

BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 912310543

Record 279 of 298 - CABPESTCD 1989-1999

TI: Bacterial exudation from lesions of Asiatic citrus canker and citrus bacterial spot.

AU: Timmer-LW; Gottwald-TR; Zitko-SE

AD: University of Florida, Institute of Food and Agricultural Sciences (IFAS), Citrus Research and Education Center, Lake Alfred, FL 33850, USA.

SO: Plant-Disease. 1991, 75: 2, 192-195; 16 ref.

PY: 1991

LA: English

AB: When water was added to wells surrounding young lesions of Asiatic citrus canker (caused by *Xanthomonas campestris pv. citri*) on detached, field-collected leaves of grapefruit, c. 104-105 bacteria/ml were exuded immediately. Bacterial exudation into the water continued at high levels for 24 h, and cumulative release ranged from 105 to 106 per lesion. Fewer bacteria were exuded and bacteria were exuded more slowly from old lesions than from young lesions. Bacterial exudation from lesions of citrus bacterial spot (CBS) produced by *X. c. pv. citrumelo* on grapefruit and Swingle citrumelo was substantially less than that from Asiatic citrus canker lesions. CBS lesions of the aggressive strain (F1) released more bacteria than those of the moderately aggressive (F6) and weakly aggressive (F100) strains, and exudation declined with all 3 strains as lesions aged. Lesions of Asiatic citrus canker and CBS lesions produced by the 3 strains in a dew chamber at 30°C exuded more than 106 bacteria/ml into water in wells surrounding new lesions. Under these conducive conditions, exudation continued at high levels for 48 h for most strains of the CBS pathogen. The inability of the CBS pathogen to spread under field conditions unless susceptible tissue is abundant, environmental conditions are favourable, and plants have been injured may in part be the result of low inoculum production and rapid decline in bacterial exudation as lesions age.

DE: inoculum-; spread-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris-pv.-citri*; bacteria-

ID: *Xanthomonas-campestris-pv-citrumelo*

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 912306161

Record 280 of 298 - CABPESTCD 1989-1999

TI: Fungal, bacterial and nematological problems of citrus, grape and stone fruits in Arab countries.

AU: Ibrahim-G; Bayaa-B

AD: Botany and Plant Pathology Section, Agricultural Research Corporation, Wad Medani, Sudan.

SO: Arab-Journal-of-Plant-Protection. 1989, 7: 2, 190-197; 46 ref.

PY: 1989

LA: English

LS: Arabic

AB: The distribution and relative economic importance of the diseases and nematodes reported on these crops are discussed. Citrus canker (*Xanthomonas campestris* pv. *citri*) is potentially one of the most important diseases. Most common on grapes are powdery mildew (*Uncinula necator*), downy mildew (*Plasmopara viticola*) and black rot (*Guignardia bidwellii*). Facilities and methods of producing healthy seedlings are inadequate in most of these countries.

DE: stone-fruits; diseases-; grapes-; Reviews-; Plant-parasitic-nematodes; fruits-; distribution-; plant-nematology; nematology-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Uncinula-necator*; *Plasmopara-viticola*; *Guignardia-bidwellii*; bacteria-; *Vitis*-

GE: Arab-countries

BT: Nematoda; invertebrates; animals; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Uncinula*; *Erysiphales*; *Ascomycotina*; *Eumycota*; fungi; *Plasmopara*; *Peronosporales*; *Mastigomycotina*; *Guignardia*; *Dothideales*; *Vitidaceae*; *Rhamnales*

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0255-983X

UD: 951216

AN: 912303171

Record 281 of 298 - CABPESTCD 1989-1999

TI: Variation in aggressiveness of *Xanthomonas campestris* pv. *citrumelo* associated with citrus bacterial spot in Florida citrus nurseries.

AU: Graham-JH; Gottwald-TR

AD: University of Florida, IFAS, Citrus Research and Education Center, 700 Experiment Station Road, Lake Alfred, FL 33850, USA.

SO: Phytopathology. 1990, 80: 2, 190-196; 25 ref.

PY: 1990

LA: English

AB: Reactions on wound-inoculated detached leaves of Swingle citrumelo and Duncan grapefruit were used to characterize str. of *X. campestris* pv. *citrumelo* associated with citrus bacterial spot (CBS) in Florida citrus nurseries and to distinguish these str. from *X. c. pv. citri*, the cause of Asiatic citrus canker. Str. of *X. c. pv. citrumelo* varied in aggressiveness based on the extent and persistence of water-soaking and the development of necrosis.

Aggressiveness on detached leaves was correlated with that on wound-inoculated leaves in the greenhouse and field. Reactions on detached leaves developed rapidly and could be evaluated after 7 d, whereas 30 d were required for the development of lesions on attached leaves. In vitro inoculations distinguished the flat-spreading lesions of CBS from the erumpent, callus-like reaction produced by *X. c. pv. citri*. In 4 nurseries, the incidence, severity and spatial distribution of CBS was related to str. aggressiveness. Only the most aggressive str. were associated with natural spread, whereas less aggressive str. were evidently spread mechanically by nursery operations. In one nursery, where str. varied from weakly to moderately aggressive, aggressiveness differed among separate disease foci. Str. from 25 unrelated nursery infestations were evaluated and the most aggressive str. occurred in only 4 nurseries. More than 75% of the nursery outbreaks were associated with Swingle citrumelo. This variety was more susceptible than Duncan grapefruit to the aggressive strain of *X. c. pv. citrumelo* and less susceptible to *X. c. pv. citri* in attached leaf tests. There were significant interactions of str. of *X. c. pv. citrumelo* of different aggressiveness with the 2 citrus cultivars.

DE: virulence-; strains-; Grapefruits-; Citrumelos-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; bacteria-; Citrus-paradisi

GE: Florida-; USA-

ID: *Xanthomonas-campestris*-pv.-*citrumelo*; Citrus-paradisi-X-Poncirus-trifoliata

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus;

South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 901146472

Record 282 of 298 - CABPESTCD 1989-1999

TI: A preliminary test on the control of citrus canker with monomolecular film-forming substance (MMFS) and other chemicals.

AU: Qiu-CH; Ni-BQ

AD: Cash Crop Station, Jiangle County, Fujian, China.

SO: Fujian-Agricultural-Science-and-Technology. 1988, No. 1, 19.

PY: 1988

LA: Chinese

AB: A test in Fujian, China, in 1986 on the control of citrus canker caused by *Xanthomonas* [campestris pv.] citri compared MMFS diluted 200, 300 and 500 times with water, and several fungicide treatments. Each chemical was applied at 5 kg/tree on 14 Apr. (early flowering), 20 May (early fruiting) and 15 Jul. (mid-fruiting). All treatments gave good control of the disease on leaves, with >80% control by MMFS diluted 200 and 300 times. MMFS diluted 200 times was also effective in controlling the disease in fruits.

DE: control-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris-pv.-citri*; bacteria-

GE: China-; Fujian-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; East-Asia; Asia; Eastern-China; China

CC: FF600; HH000

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General

PT: Journal-article

UD: 951216

AN: 902300245

Record 283 of 298 - CABPESTCD 1989-1999

TI: Citrus canker - the role of enzymes and xanthan gum in infection and spread of the pathogen.

AU: Webb-PG; Biggs-RH; Gander-JE

AD: Fruit Crops Department, Fife Hall, University of Florida, Gainesville, FL 32611, USA.

SO: Proceedings-of-the-Florida-State-Horticultural-Society. 1987, 100: 77-78; 3 ref.

PY: 1987

LA: English

AB: *Xanthomonas campestris* pv. citri and *X. campestris* pv. dieffenbachia remained viable across a wide range of temp. (27-50°C) and pH values (5.0-8.8). Inoculation of Swingle citrumelo (*Poncirus trifoliata* X *Citrus paradisi*) and Duncan grapefruit (*C. paradisi*) plants with *X. campestris* pv. citri alone and in combination with selected enzymes revealed that the pathogen will not grow in the presence of certain cell-wall hydrolyzing enzymes. Tests with various sugars and acids indicated that butyric acid was most effective in preventing growth of the bacteria. Studies indicated several amendments which enhance or reduce the pathogenic population. Xanthan gum-amended *X. campestris* pv. citri and *X. campestris* pv. dieffenbachia inoculations produced rapid long-term growth of the bacteria in citrus. The gums apparently protected the organism from desiccation and UV sunlight and provided aerosol action that encased the microbe for successful dispersal. Spray inoculation trials with Swingle citrumelo indicated that canker lesion formation was enhanced 7-fold with xanthan gum-amended solutions. It is concluded that xanthan gum protected the pathogen and extended the range of environmental conditions which promoted infection. This paper was presented at the 100th annual meeting of the Florida State Horticultural Society, held at Orlando, Florida, USA on 2-5 Nov. 1987.

DE: Grapefruits-; host-parasite-relationships; enzymes-; xanthan-; Citrumelos-; fruit-crops;

plant-pathogenic-bacteria; plant-pathology

OD: Xanthomonas-campestris-pv.-citri; Xanthomonas-campestris-pv.-dieffenbachiae; Citrus-; bacteria-; Citrus-paradisi

ID: Florida-State-Horticultural-Society; Citrus-paradisi-X-Poncirus-trifoliata

BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Conference-paper; Journal-article

IS: 0886-7283

UD: 951216

AN: 901146773

Record 284 of 298 - CABPESTCD 1989-1999

TI: Citrus canker [Xanthomonas campestris pv. citri (Hasse) Dye]: disease progress in time in the state of Sao Paulo, Brazil.

AU: Palazzo-DA; Nogueira-EM-de-C; Ceravolo-LC; Goren-R (ed.); Mendel-K

AD: Instituto Biologico, Sao Paulo, Brazil.

SO: Citriculture. Proceedings of the Sixth International Citrus Congress, Middle-East, Tel Aviv, Israel, 6-11 March 1988. Volume 2. Cultural practices, diseases and nematodes. 1988, 1005-1011; 13 ref.

PB: Balaban Publishers; Rehovot; Israel

PY: 1988

LA: English

AB: Since 1984, epidemiological field experiments on citrus canker and its causal agent X. campestris pv. citri were undertaken at the Experimental Station of the Instituto Biologico in Sao Paulo. Data obtained from Jul. 1985 to Mar. 1987 showed a fast spread of the disease during the summer months (Jan., Feb. and Mar.), favoured by SE and NW winds, at temp. of 22°C and constant, regular rainfall. The infection level during this period increased gradually, and its max. level agreed with the prevalent climate conditions. The max. level may be reached in Feb. or in Mar., depending on the beginning of the rainy season in Sep. or in Dec. Disease intensity was more important at the western and northern sides of the trees which are more exposed to local winds. Disease incidence and severity were very high when the rainy season started in Sep. When a long dry period prevailed from Jun. to Dec., the multiplication of X. campestris pv. citri on leaves and fruits stopped completely, or decreased to a much lower level.

DE: epidemiology-; environmental-factors; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-

GE: Brazil-

ID: International-Citrus-Congress

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; South-America; America

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Conference-paper

IB: 3-8236-1136-4

UD: 951216

AN: 901146236

Record 285 of 298 - CABPESTCD 1989-1999

TI: Citrus canker intraclass correlation coefficient of the index of healthy leaves in face of the inoculation process.

OT: Cancro citrico: coeficiente de correlacao intraclasse para o indice de folhas sadias em face do processo de inoculacao.

AU: Oliveira-D-de-A; Ceravolo-LC; Pereira-ALG; Campacci-CA

AD: Inst. Biol., 13100 Campinas, SP, Brazil.

SO: Fitopatologia-Brasileira. 1988, 13: 1, 42-45; 17 ref.

PY: 1988

LA: Portuguese

LS: English

AB: Under inoculation with *Xanthomonas campestris* pv. *citri*, the intraclass correlation coefficient of healthy leaves was not significant in 15 of 20 samples during 24 months. Under natural infection, the coefficient was significant and positive in 17 of 20 samples during the same period. On the basis of estimates of the intraclass correlation coefficient, it was found sufficient to take one plant from an experimental plot.

DE: sampling-; Techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0100-4158

UD: 951216

AN: 901142412

Record 286 of 298 - CABPESTCD 1989-1999

TI: Susceptibility of Sicilian lemon (*Citrus lemon*) grafted on different rootstocks to citrus canker caused by *Xanthomonas campestris* pv. *citri*.

OT: Susceptibilidade do limao Siciliano (*Citrus lemon*), enxertado sobre diferentes porta-enxertos, ao cancro citrico causado por *Xanthomonas campestris* pv. *citri*.

AU: Leite-RP Jr.; Santos-SD

AD: Instituto Agronomico do Parana, 86100 Londrina, PR, Brazil.

SO: Fitopatologia-Brasileira. 1988, 13: 4, 353-358; 18 ref.

PY: 1988

LA: Portuguese

LS: English

AB: On lemon [*C. limon*] grafted on Citrus karna, African rough lemon and Rangpur lime [*C. limonia*], incidence of bacterial canker on leaves and fruits was over 62 and 97%, respectively. On leaves of plants grafted on *Poncirus trifoliata* incidence was below 9%, while on those grafted on sour orange and *Citrus volkameriana* it was below 34%. On fruits, incidence was below 64% for plants grafted on *P. trifoliata* and below 45% for those grafted on sour orange.

DE: Lemons-; rootstocks-; rootstock-scion-relationships; diseases-; Rough-lemons; Sour-oranges; fruit-crops; subtropical-fruits; citrus-fruits; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-*citri*; Citrus-; Citrus-karna; *Poncirus-trifoliata*; Citrus-volkameriana; Citrus-limonia; bacteria-; Citrus-jambhiri; Citrus-aurantium

BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; *Poncirus*

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0100-4158

UD: 951216

AN: 901141334

Record 287 of 298 - CABPESTCD 1989-1999

TI: Occurrence and distribution of citrus canker in Taiwan.

AU: Wu-WC; Tzeng-KC; Lee-MC; Kuo-HF

AD: Graduate Institute of Plant Pathology, National Chung Hsing University, Taichung 40227, Taiwan.

SO: Plant-Protection-Bulletin,-Taiwan. 1989, 31: 2, 139-150; 41 ref.

PY: 1989

LA: Chinese

LS: English

AB: Between 1975 and 1986, 215 strs of *Xanthomonas campestris* pv. *citri* were isolated from grapefruit, lemon

and other citrus species, cultivars and hybrids grown in Taiwan. The strs have been preserved and deposited in Taiwan culture collections.

DE: Grapefruits-; Lemons-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Xanthomonas-campestris-pv.-citri; Citrus-; bacteria-; Citrus-paradisi

GE: Taiwan-

BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; South-East-Asia; Asia

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

UD: 951216

AN: 901139788

Record 288 of 298 - CABPESTCD 1989-1999

TI: Outbreaks and new records. Australia. Eradication of citrus canker from the Torres Strait.

AU: Catley-A

AD: Pl. Quarantine and Inspection Branch, Australian Quarantine and Inspection Serv., Canberra, ACT, Australia.

SO: FAO-Plant-Protection-Bulletin. 1988, 36: 4, 184; 1 ref.

PY: 1988

LA: English

AB: In 1984 citrus canker (*Xanthomonas campestris* pv. *citri*) was detected on Thursday Island in the Torres Strait in 11 infected trees. These were mainly limes and some sweet oranges. As a precaution all trees within a 15-m radius were destroyed, a quarantine imposed, and no tree planting allowed for 2 yr. No infection has been observed for 2 yr which indicates that citrus canker has been eradicated from Torres Strait.

DE: Limes-; Oranges-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Xanthomonas-campestris-pv.-citri; Citrus-; bacteria-

GE: Australia-

BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Australasia; Oceania

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0254-9727

UD: 951216

AN: 891132770

Record 289 of 298 - CABPESTCD 1989-1999

TI: The occurrence of citrus canker disease in United Arab Emirates (U.A.E.).

AU: El-Goorani-MA

AD: Min. Agric. Fisheries, Ras Al Khimah, United Arab Emirates.

SO: Journal-of-Phytopathology. 1989, 125: 3, 257-264; 18 ref.

PY: 1989

LA: English

LS: German

AB: Citrus canker disease caused by *Xanthomonas campestris* pv. *citri* is reported for the first time in UAE. The disease was found only on lime in 32 orchards out of 4456 citrus orchards inspected during 1984-85. Results of pathogenicity tests showed the citrus canker organism in the UAE to have a host range similar to the 'A' str. of the bacterium. Of 5 treatments applied to artificially inoculated lime seedlings, only copper hydroxide significantly ($P<0.05$) reduced disease incidence; streptomycin, kasumin, copper oxychloride and Bordeaux mixture were ineffective.

DE: Limes-; control-; Copper-hydroxide; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Xanthomonas-campestris-pv.-citri; Citrus-; bacteria-

GE: United-Arab-Emirates

RN: 20427-59-2

BT: bacteria; prokaryotes; Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Persian-Gulf-States; Middle-East; West-Asia; Asia
CC: FF600; HH000
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Pathogen,-Pest-and-Parasite-Management-General
PT: Journal-article
IS: 0931-1785
UD: 951216
AN: 891132758

Record 290 of 298 - CABPESTCD 1989-1999

TI: Population dynamics and survival of *Xanthomonas campestris* in soil in citrus nurseries in Maryland and Argentina.
AU: Graham-JH; Gottwald-TR; Civerolo-EL; McGuire-RG
AD: Univ. Florida, IFAS, Citrus Res. Education Cent., 700 Experiment Station Rd, Lake Alfred, FL 33850, USA.
SO: Plant-Disease. 1989, 73: 5, 423-427; 17 ref.
PY: 1989
LA: English
AB: The population dynamics and survival in soil of nursery str of *X. campestris* causing citrus bacterial spot in Florida (Xc) and str of *X. c. pv. citri* causing Asiatic citrus canker (Xcc-A) were evaluated in citrus nurseries under quarantine in Maryland and in Argentina, where citrus canker is endemic. In Maryland, Xc and Xcc-A were recovered from the soil under infected nursery seedlings of Swingle citrumelo when the soil was relatively moist (psi \geq -30 cbar) but not when it was drier (psi $<$ -100 cbar). The pathogens were not detected on leaves of adjacent uninfected trees or in the soil under them. The populations of Xc and Xcc-A were generally lower in soil than on leaves with lesions and on symptomless leaves from diseased plants. In Argentina, Xcc-A was detected in a sandy soil in grapefruit and sweet orange nurseries with disease proportions of 0.97 and 0.89, respectively. Fluctuations in soil populations were correlated with rainfall, soil moisture and air temp., as well as leaf populations. After the removal of infested plants to simulate eradication, Xcc-A could not be recovered after 21 d from either nursery site. It appears that Xcc-A and Xc have very limited survival capability in subtropical soils.
DE: survival-; environmental-factors; Soil-; citrus-soils; Soil-types-cultural; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris; Xanthomonas-campestris-pv.-citri; Fungi-; bacteria-
GE: Maryland-; Argentina-; USA-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Xanthomonas; Pseudomonadaceae; Gracilicutes; Xanthomonas-campestris; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; South-America
CC: FF600; FF700; FF900; FF500; HH000; JJ100
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Disorders-and-Injuries-Not-caused-directly-by-Organisms; Environmental-Tolerance-of-Plants; Weeds-and-Noxious-Plants; Pathogen,-Pest-and-Parasite-Management-General; Soil-Biology
PT: Journal-article
IS: 0191-2917
UD: 951216
AN: 891129442

Record 291 of 298 - CABPESTCD 1989-1999

TI: Association of citrus canker pustules with leaf miner tunnels in North Yemen.
AU: Cook-AA
AD: Hort. Improvement and Training Subproject, California State Polytech. Univ., CA, USA.
SO: Plant-Disease. 1988, 72: 6, 546.
PY: 1988
LA: English
AB: Citrus pustules [caused by *Xanthomonas campestris* pv. *citri*] were often observed over and along the entire length of *Phyllocnistis citrella* tunnels on leaves, but on 1 surface only (usually the lower). *P. citrella* showed no obvious preference for citrus varieties and many, in addition to the susceptible Mexican lime, were infected. It is

suggested that leaf miners can disseminate and facilitate infection by *X. campestris* pv. *citri*.

DE: transmission-; Insect-pests; Plant-diseases; plant-pathogens; vectors-; Limes-; fruit-crops; fruits-; plant-pathogenic-bacteria; plant-pathology; agricultural-entomology

OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; *Phyllocnistis-citrella*; *Phyllocnistidae*-; *Lepidoptera*-; bacteria-; arthropods-

GE: Yemen-

ID: *Xanthomonas-citri*

BT: arthropod-pests; pests; animals; arthropods; invertebrates; insects; bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; *Phyllocnistis*; *Phyllocnistidae*; *Lepidoptera*; West-Asia; Asia; Middle-East; Gram-negative-bacteria

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0191-2917

UD: 951216

AN: 891126203

Record 292 of 298 - CABPESTCD 1989-1999

TI: Asiatic citrus canker: spatial and temporal spread in simulated new planting situations in Argentina.

AU: Gottwald-TR; McGuire-RG; Garran-S

AD: ARS, USDA, Orlando, FL 32803, USA.

SO: *Phytopathology*. 1988, 78: 6, 739-745; 27 ref.

PY: 1988

LA: English

AB: Single replant trees, one each of cultivars Marsh grapefruit and Valencia orange, were inoculated with a rifampicin-resistant str. of *Xanthomonas campestris* pv. *citri*. These inoculated trees were planted in the centre of 2 plots each consisting of 187 trees (c. 1.0 m tall) of the corresponding cultivar. Spread of epiphytic bacteria from the focal trees was monitored by immunofluorescence microscopy, and incidence of diseased trees was recorded. Disease was first detected 49 d after diseased trees were placed in the field. Initial disease spread was highly directional and associated with high winds and blowing rain in mid-Jan. Subsequent spread was less rapid and generally nondirectional. Monomolecular, logistic and Gompertz models were tested for goodness-of-fit to disease progress data, the Gompertz model was superior. The rate of disease increase (Gompertz rate parameter, k) was 0.005 and 0.009/d for orange and grapefruit plots, respectively. Disease gradients of $-\ln(-\ln(y))=a-b \log_{10} m$, where y =disease severity (%) and m =distance from the disease focus of infection in meters, varied over time from -0.713 to -1.237 and from +0.048 to -1.856 for orange and grapefruit plots, respectively. Disease gradients steepened over time as a result of disease-induced defoliation that often exceeded 90% on individual trees.

DE: Oranges-; spread-; Grapefruits-; Techniques-; models-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: *Xanthomonas-campestris*-pv.-*citri*; Citrus-; bacteria-; *Citrus-paradisi*

GE: Argentina-

BT: bacteria; prokaryotes; *Xanthomonas-campestris*; *Xanthomonas*; *Pseudomonadaceae*; *Gracilicutes*; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; Citrus; South-America; America

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 891122837

Record 293 of 298 - CABPESTCD 1989-1999

TI: Studies on the resistance of citrus varieties to citrus canker at the President Prudente Experimental Station, SP.

OT: Estudos sobre a resistencia de variedades citricas ao cancro citrico, na Estacao Experimental de Presidente Prudente - SP.

AU: Nogueira-EM-de-C; Palazzo-DA; Ceravolo-LC; Carvalho-MLV

AD: Inst. Biol., Sao Paulo, Brazil.

SO: Laranja. 1987, 1: 141-148; 7 ref.
PY: 1987
LA: Portuguese
LS: English
AB: A brief account is given of inoculation trials with *Xanthomonas campestris* pv. *citri* to screen citrus germplasm since 1982.
DE: varietal-reactions; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600; FF020; HH600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Plant-Breeding-and-Genetics; Host-Resistance-and-Immunity
PT: Journal-article
IS: 0102-1907
UD: 951216
AN: 891118892

Record 294 of 298 - CABPESTCD 1989-1999

TI: Epidemiological studies on citrus canker (*Xanthomonas campestris* pv. *citri*): progress of the disease in time.
OT: Estudos epidemiologicos em cancro citrico (*Xanthomonas campestris* pv. *citri*): progresso da doenca no tempo.
AU: Palazzo-DA; Nogueira-EM-de-C; Ceravolo-LC; Montovanello-CM
AD: Inst. Biol., Sao Paulo, Brazil.
SO: Laranja. 1987, 1: 133-140; 7 ref.
PY: 1987
LA: Portuguese
LS: English
AB: In 1985-86, citrus canker spread rapidly in summer, favoured by SE and NW winds, temp. of 25°C or more and rain.
DE: epidemiology-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0102-1907
UD: 951216
AN: 891118891

Record 295 of 298 - CABPESTCD 1989-1999

TI: Studies on the survival of the bacterium causing citrus canker.
OT: Estudos sobre a sobrevivencia da bacteria agente causal do cancro citrico.
AU: Malavolta-VA Jr.; Rodrigues-Neto-J; Carvalho-MLV
AD: Inst. Biol., Sao Paulo, Brazil.
SO: Laranja. 1987, 1: 125-132; 12 ref.
PY: 1987
LA: Portuguese
LS: English
AB: Studies on survival of *Xanthomonas campestris* pv. *citri* in soil, non-host plants and citrus sap are discussed.
DE: survival-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0102-1907
UD: 951216
AN: 891118890

Record 296 of 298 - CABPESTCD 1989-1999

TI: Use of serological tests to detect citrus canker.
OT: Aplicacao de testes sorologicos para a deteccao do cancro citrico.
AU: Bach-EE; Marsiglio-AF
AD: Inst. Biol., Sao Paulo, Brazil.
SO: Laranja. 1987, 1: 121-124; 3 ref.
PY: 1987
LA: Portuguese
LS: English
AB: Using ELISA and monoclonal antibodies produced in vitro, a purified antigen having exopolysaccharides in its structure was obtained from the capsule of Xanthomonas campestris pv. citri. The specificity of antisera obtained with these antigens was determined.
DE: serology-; fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0102-1907
UD: 951216
AN: 891118889

Record 297 of 298 - CABPESTCD 1989-1999

TI: Citrus canker: present situation in Sao Paulo State and other contaminated States.
OT: Cancro citrico: situacao atual no Estado de Sao Paulo e outros estados contaminados.
AU: Namekata-T
AD: Inst. Biol., Sao Paulo, Brazil.
SO: Laranja. 1987, 1: 117-120.
PY: 1987
LA: Portuguese
LS: English
AB: Citrus canker [Xanthomonas campestris pv. citri] is still present in Sao Paulo 30 yr after it first appeared, although eradication programmes have had some effect. The presence of the disease in adjoining States and neighbouring countries makes the problem difficult.
DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; Xanthomonas-campestris-pv.-citri; bacteria-
GE: Brazil-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants;
Xanthomonas-campestris; Xanthomonas; Pseudomonadaceae; Gracilicutes; South-America; America
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0102-1907

UD: 951216
AN: 891118888

Record 298 of 298 - CABPESTCD 1989-1999

TI: The history and rediscovery of citrus canker in Florida.
AU: Whiteside-JO
AD: Citrus Res. Exp. Sta., Lake Alfred, FL, USA.
SO: Citrograph. 1988, 73: 10, 197-206; 15 ref.
PY: 1988
LA: English
AB: Key features of the disease caused by *Xanthomonas campestris* pv. *citri*, its occurrence in Florida, its recent discovery along the Gulf Coast and its occurrence in Argentina, (where the disease has been present for 25 yr and which has similar environmental conditions to those in Florida) are discussed. Prospects for eradication of the disease are considered.
DE: fruit-crops; plant-pathogenic-bacteria; plant-pathology
OD: Citrus-; *Xanthomonas-campestris*-pv.-*citri*; bacteria-
GE: Florida-; USA-
BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-Atlantic-States-of-USA; Southern-States-of-USA; USA; North-America; America; Gulf-States-of-USA; Southeastern-States-of-USA
CC: FF600
CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants
PT: Journal-article
IS: 0009-7578
UD: 951216
AN: 891118427

No.	Records	Request
1	29713	citrus
2	5350	canker
* 3	300	citrus canker
4	190410	biological
5	528338	control
6	10	#3 and biological control

Record 1 of 2 - CABPESTCD 1989-1999

TI: Analysis of disease progress of citrus canker in nurseries in Argentina.
AU: Gottwald-TR; Timmer-LW; McGuire-RG
AD: USDA, ARS, Horticultural Research Laboratory, Orlando, FL 32803, USA.
SO: Phytopathology. 1989, 79: 11, 1276-1283; 28 ref.
PY: 1989
LA: English
AB: Three nursery plots of Duncan grapefruit, Pineapple sweet orange and Swingle citrumelo rootstock were established in Concordia, Entre Rios, Argentina, to study the temporal increase and spatial spread of citrus bacterial canker from a single focal point. Focal trees of each cultivar were inoculated with *Xanthomonas campestris* pv. *citri* and planted in the centre of each plot. Disease increase over time was measured as either disease severity (proportion of leaves infected/plant) or disease incidence (proportion of plants infected). Exponential, monomolecular, logistic, Gompertz and Weibull models were tested for appropriateness by non-linear regression analysis. The Gompertz model was superior for describing increase in disease incidence and disease severity in all 3 citrus nurseries. The rate of disease increase was greater in the most susceptible host, Duncan grapefruit, than in less susceptible hosts. Disease spread coincided with rain splash dispersal and a rapid increase in the apparent infection rate after windblown rainstorms. Rate of disease spread was independent of wind direction. Aggregation of diseased plants was observed in all 3 nurseries throughout the duration of the tests. Aggregation of individuals appeared to be equivalent between and across rows, indicating that splash dispersal of inoculum was not impeded by between-row

distances. Secondary foci were established early in the epidemics and soon overcame the effect of the original focus of disease. The slope of linearized disease gradients, $(-1n(-1n)(y)) = a + b \ln(x)$, where y = disease incidence and x = distance from the focus of infection in meters, fluctuated over time because of disease-induced defoliation of severely infected plants. Defoliation of more severely diseased plants near the focus subsequently resulted in positive disease gradient slopes for the susceptible Duncan grapefruit nursery as disease levels near the focus diminished.

DE: models-; epidemiology-; techniques-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

GE: Argentina-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes; South-America; America

CC: FF600; ZZ900

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants; Techniques-and-Methodology

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 901176091

Record 2 of 2 - CABPESTCD 1989-1999

TI: Isozyme analysis of *Xanthomonas campestris* pv. citri.

AU: Kubicek-QB; Civerolo-EL; Bonde-MR; Hartung-JS; Peterson-GL

AD: ARS, USDA, Beltsville, MD 20705, USA.

SO: Phytopathology. 1989, 79: 3, 297-300; 20 ref.

PY: 1989

LA: English

AB: Isoenzyme analysis of 14 putative isoenzymic loci by horizontal starch gel electrophoresis was conducted on 36 strs of *X. campestris* pv. citri representing 4 pathogenic variants associated with different forms of citrus bacterial canker disease in 8 countries. An additional 80 strs of *X. campestris* associated with citrus bacterial spot disease, primarily in Florida citrus nurseries, were also analysed. Four enzymes were monomorphic in all 116 strs. The number of isomorphs for the 10 remaining polymorphic loci ranged from 2 to 5. Generally, all strs of *X. c.* pv. citri were isoenzymically similar, but not identical in all cases, to the neopathotype str. No isoenzymes were found in the citrus canker groups of strs that distinguished any of the forms of citrus canker. As a subgroup, the Asiatic citrus canker strs exhibited relatively little isoenzymic polymorphism despite their varied origins worldwide. In contrast, several isoenzymic alleles were present only in the set of citrus bacterial spot strs isolated from Florida citrus nurseries. These strains also exhibited extensive isoenzymic polymorphism. It is concluded that isoenzyme analysis may be a useful technique in epidemiological studies of phytopathogenic bacteria.

DE: isoenzymes-; fruit-crops; plant-pathogenic-bacteria; plant-pathology

OD: Citrus-; *Xanthomonas-campestris*-pv.-citri; bacteria-

BT: bacteria; prokaryotes; Rutaceae; Sapindales; dicotyledons; angiosperms; Spermatophyta; plants; *Xanthomonas-campestris*; *Xanthomonas*; Pseudomonadaceae; Gracilicutes

CC: FF600

CD: Pests,-Pathogens-and-Biogenic-Diseases-of-Plants

PT: Journal-article

IS: 0031-949X

UD: 951216

AN: 891128022